PB89-153845

Superfund Record of Decision (EPA Region 4)
Chemtronics Site, Swannanoa, Buncombe County
North Carolina. April 1988
First Remedial Action

(U.S.) Environmental Protection Agency
Washington, DC

5 Apr 88

U.S. Department of Commerce
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EPA/ROD/R04-88/032
April 1988

PB89-153845

EPA

Superfund Record of Decision:

Chemtronics, NC

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16. Abstract (Limit: 200 words)

The Chemtronics site, an active waste disposal facility, is located in a rural area of Swannanoa, Buncombe County, North Carolina. The 1,027-acre site was developed as an industrial facility in 1952. Several companies operated the facility prior to its purchase by Chemtronics, Inc. in 1978. Waste disposal operations only occurred over approximately ten acres of the site. Existing records indicate the presence of twenty-three individual onsite disposal areas (DAs) which are grouped into six discrete areas: DA-6, DA-7/8, DA-9, DA-10/11, DA-23 and the acid pit. The site can also be divided into two geographical subsections referred to as Front Valley and Gregg Valley. Disposal practices prior to 1971 were not well defined; however, solid waste materials and possibly solvents were incinerated in pits dug in an area previously referred to as the burning ground and currently referred to as the acid pit area. Additionally, chemical wastes were disposed of in trenches beside this burning ground. Waste materials generated in the production of the chemical warfare agent, 3-quinuclidinyl benzilate (BZ), and the tear gas agent, o-chlorobenzylidene malononitrile (CS), were placed in 55-gallon drums with a neutralizing solution, and then buried onsite in trench-type landfills. From 1971 to 1975, small volumes of liquid wastes were disposed of in onsite pits/trenches. Solid wastes, rocket motors, explosive wastes, and other
(See Attached Sheet)

17. Document Analysis a. Descriptors
Record of Decision
Chemtronics, NC
First Remedial Action - Final
Contaminated Media: gw, sediments, soil, sw
Key Contaminants: metals (arsenic), organics (pesticides), VOCs (benzene, PCE, TCE)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement

19. Security Class (This Report) None

20. Security Class (This Page) None

21. No. of Pages 262

22. Price

(See ANSI-Z39.18) *See Instructions on Reverse* **OPTIONAL FORM 272 (4-77)**
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Department of Commerce

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Chemtronics, NC
First Remedial Action - Final

16. ABSTRACT (continued)

waste types also were burned in the burning ground area. From 1975 to 1979, Chemtronics, Inc. constructed pits/trenches, as needed, for the disposal of spent acid and various organic wastes. These pits/trenches were constructed in the burning ground area. In 1980, North Carolina ordered Chemtronics to discontinue all discharges to site pits/trenches. The pits subsequently have been back-filled. Starting in 1979, Chemtronics installed a 500,000 gallon lined lagoon over an old leaching field for the biotreatment of waste waters. The incompatibility of the liner with the brominated wastes introduced into the lagoon caused the lagoon to leach its contents. The biolagoon was reconstructed in August, 1980, with a different liner, and deactivated in 1984. In September 1984, the U.S. Army Toxic and Hazardous Materials Agency sampled two drums at the surface in DA-10/11. These drums were suspected of containing wastes from the production of BZ. Although no BZ was found, an immediate removal of these drums was initiated in January, 1985, due to heightened public awareness/involvement with the site. The primary contaminants of concern affecting the soil, sediments, ground water and surface water include VOCs, benzene, PCE, TCE, organics, metals, arsenic, pesticides, and explosives.

The selected remedial action for this site includes: multi-layer capping of DA 6, DA 7/8, DA-9, DA-10/11 and the acid pit area with fencing, placement of a vegetative cover over the cap, and installation of a gas collection ventilation system, if necessary; treatability studies for soils associated with DA-23 to determine the most appropriate soil fixation/stabilization/solidification process and mixing ratios followed by onsite capping; ground water pump and treatment which may include air stripping, carbon adsorption, or metal removal with treatment and discharge to be determined during design; sampling of pond water and sediments, and if necessary, treat using the ground water treatment system or the selected soil treatment/containment process; and sediment, ground water, and surface water monitoring. The estimated present worth cost for this remedial action ranges from $6,247,300 to $8,242,900.

ENFORCEMENT
RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

CHEMTRONICS SITE
SWANNANOA, BUNCOMBE COUNTY
NORTH CAROLINA

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV
ATLANTA, GEORGIA

DECLARATION FOR THE RECORD OF DECISION

SITE NAME and LOCATION

Chemtronics
Swannanoa, Buncombe County, North Carolina

STATEMENT OF PURPOSE

This document represents the selected remedial action for this Site developed in accordance with CERCLA as amended by SARA, and to the extent practicable, the National Contingency Plan.

The State of North Carolina has concurred on the selected Remedy.

STATEMENT OF BASIS

The decision is based upon the administrative record for the Chemtronics Site. The attached index identifies the items which comprise the administrative record upon which the selection of a remedial action is based.

DESCRIPTION OF THE SELECTED REMEDY

MIGRATION CONTROL (Remediating Contaminated Groundwater)

Installation of a groundwater interception and extraction system downgradient of the disposal areas in both the Front Valley and Gregg Valley. The level and degree of treatment of the extracted groundwater will depend on 1) the ultimate discharge point of this water and 2) the level of contaminants in the extracted groundwater. The three water discharge alternatives for the treated water are 1) the local sewer system, 2) a surface stream and 3) on-site irrigation. The range of treatment for the extracted groundwater includes air stripping, filtration through activated carbon filter and metal removal. The point of discharge and the degree of treatment will be determined in the Remedial Design stage. The water discharged will meet all ARAR's.

A monitoring program, employing bioassays, will be established for surface water/sediment. Monitoring locations will be located on the Unnamed Stream, Gregg Branch and Bee Tree Creek. The purpose of this monitoring program is 1) to insure no adverse impact on these streams during implementation of the remedial action and 2) to establish a data base to use to measure the success of the remedial action implemented. The initiation of this monitoring program will be concurrent with the remedial design activities.

Review the existing groundwater monitoring system and install additional wells, if necessary, to insure proper monitoring of groundwater downgradient of each disposal area. This includes disposal areas #6, #7/8, #9, #10/11, #23, and the acid pit area.

In addition to the monitoring of the groundwater downgradient of each disposal area identified above, action levels for the contaminants present in the disposal areas will be set so that after remediation levels for groundwater have been obtained and verified through monitoring, if this level is reached in any subsequent sampling episode, a remedial action to permanently eliminate that source of contamination will be initiated.

SOURCE CONTROL (Remediating Contaminated Soils)

Cap Disposal Area #6, Disposal Area #7/8, Disposal Area #9, Disposal Area #10/11, and the Acid Pit Area with a Multi-Layer cap which includes a synthetic liner. Security fencing, vegetative covers and, where deemed necessary, a gas collection/ventilation system will be installed. The multi-layer cap will meet as a minimum, the standards specified under 40 CFR Subsection 264, Subparts K-N.

For the contaminants and contaminated soils associated with DA-23, determine the most appropriate soil fixation/stabilization/solidification process and the mixing ratios for the components involved. Following the soil fixation/stabilization/solidification for DA-23, the entire surface of the disposal area will be capped.

Sample On-Site Pond on Unnamed Stream

During the Remedial Design stage, sample the water and sediment in the pond. If the analysis indicates contaminants in either the water column or sediment, then the pond will be drained, with the water being treated through the treatment system developed for addressing the extracted groundwater and the sediments could be either commingled with the soils of Disposal Area #23 for fixation/stabilization/solidification or transported to another disposal area and capped along with that disposal area.

DECLARATION

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate, and is cost-effective. This remedy satisfies the preference for treatment that reduces toxicity, mobility, or volume as a principal element. Finally, it is determined that this remedy utilizes permanent solution and alternative treatment technologies to the maximum extent practicable.

April 5, 1988
Date

Lee A. DeHihns III, for
Greer C. Tidwell
Regional Administrator

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

CHEMTRONICS SITE
SWANNANOA, BUNCOMBE COUNTY NORTH CAROLINA

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV
ATLANTA GEORGIA

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ENFORCEMENT RECORD OF DECISION
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION
CHEMTRONICS SITE
SWANNANOA, BUNCOMBE COUNTY, NORTH CAROLINA

1.0 INTRODUCTION

The Chemtronics Site was included on the first official National Priorities List (NPL) published by EPA in December 1982. The Chemtronics Site has been the subject of a Remedial Investigation (RI) and a Feasibility Study (FS) performed by two of the potentially responsible parties (PRPs), Chemtronics, Inc., and Northrop Corporation, under an Administrative Order of Consent dated October 1985. The third viable PRP, Hoechst Celanese Corporation, declined to participate in the RI/FS. The RI report, which examined air, groundwater, soil, and surface water and sediment contamination at the Site and the routes of exposure of these contaminants to the public and environment was accepted by the Agency in May 1987. The FS, which develops, examines and evaluates alternatives for remediation of the contamination found on site, was issued in draft form to the public in February 1988.

This Record of Decision has been prepared to summarize the remedial alternative selection process and to present the selected remedial alternative.

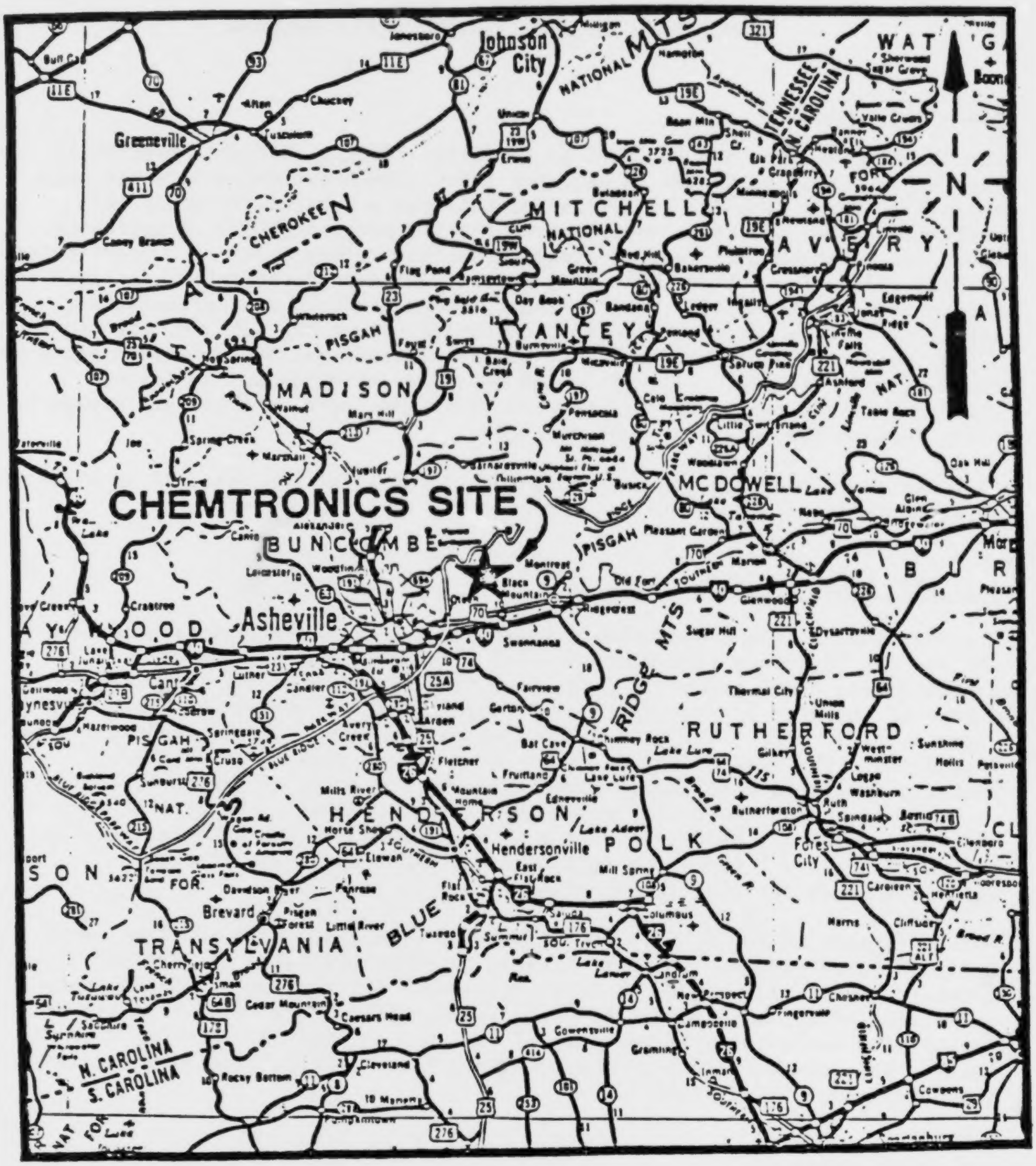
1.1 SITE LOCATION AND DESCRIPTION

The Chemtronics Site encompasses approximately 1,027 acres and is located at 180 Old Bee Tree Road in a rural area of Swannanoa, Buncombe County, approximately 8 miles east of Asheville, North Carolina. The approximate center of the site lies at latitude 35 degrees 38′ 18" north and longitude 82 degrees 26′ 8" west. The Site is bounded on the east by Bee Tree Road and Bee Tree Creek. The area to the north and west of the Site is comprised of sparsely inhabited woodlands. Immediately to the south of the Site, there are several industrial facilities which lie on land that was once part of the original (Oerlikon) property. The general location of the Site is shown in Figure 1. Figure 2 shows the approximate boundaries of the Site in relationship to its immediate surroundings.

The topography of the Site is steep, ranging from 2,200 to 3,400 feet above mean sea level (amsl). The Site lies on the southeast side of Bartlett Mountain and is moderate to heavily vegetated. Surrounding mountains reach elevations of approximately 3,800 feet amsl. All surface water from the Site drains into small tributaries of Bee Tree Creek or directly into Bee Tree Creek. This creek flows into the Swannanoa River which ultimately, empties into the French Broad River.

1.2 SITE HISTORY

The property comprising the Chemtronics Site was first developed as an industrial facility in 1952. The Site has been owned/operated by Oerlikon Tool and Arms Corporation of America (1952-1959), Celanese Corporation of America (Hoechst Celanese Corporation) (1959-1965), Northrop Carolina, Inc. (Northrop Corporation) (1965-1971), Chemtronics, Inc., as apart of Airtronics, Inc.,


CHEMTRONICS SITE
Johnson City
Greeneville
Asheville
Hendersonville
Brevard
Black Mountain
Swannanoa
Montreat
Old Fort
Marion
Spruce Pine
Burnsville
Forest City
Rutherfordton
Fletcher
Columbus
Tryon
Saluda
Lake Lure
Chimney Rock
BUNCOMBE
MADISON
YANCEY
MITCHELL
AVERY
MCDOWELL
RUTHERFORD
HENDERSON
POLK
TRANSYLVANIA
HAYWOOD
CHEROKEE N
PISGAH
NATIONAL
BLUE RIDGE MTS
TENNESSEE
N. CAROLINA
S. CAROLINA
N

1" = 13 MILES

FIGURE NO.

1

GENERAL LOCATION MAP
CHEMTRONICS, INC.
SWANNANOA, NORTH CAROLINA

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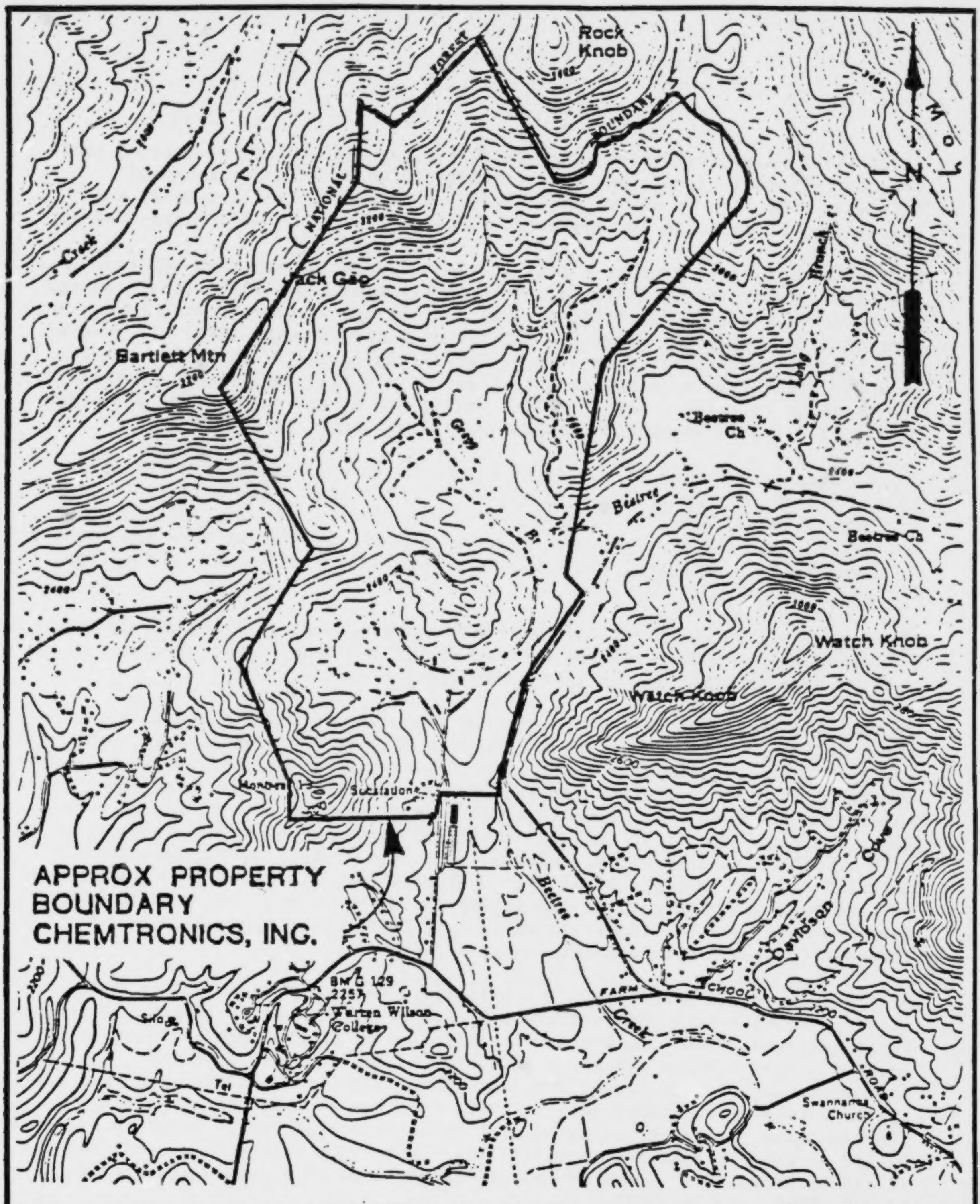

Rock Knob
NATIONAL FOREST BOUNDARY
Creek
Jack Gap
Bartlett Mtn
Beetree Ch
Beetree
Beetree Ch
Watch Knob
Watch Knob
Davidson
Cove
APPROX PROPERTY
BOUNDARY
CHEMTRONICS, INC.
BM G 129
2257
Warren Wilson
College
FARM SCHOOL ROAD
Creek
Swannanoa
Church
N

USGS CRAGGY PINNACLE, N.C. & OTEEN, N.C. QUADS SCALE 1 : 24,000

FIGURE NO. 2

SITE LOCATION MAP

CHEMTRONICS, INC.

SWANNANOA, NORTH CAROLINA

(1971-1978), and Chemtronics, Inc. (1978 - present). The Site operated under the name of Amcel Propulsion, Inc. (1959-1965) under both Oerlikon and Celanese. The Site is currently occupied by an active facility owned and operated by Chemtronics Incorporated, a subsidiary of the Halliburton Company.

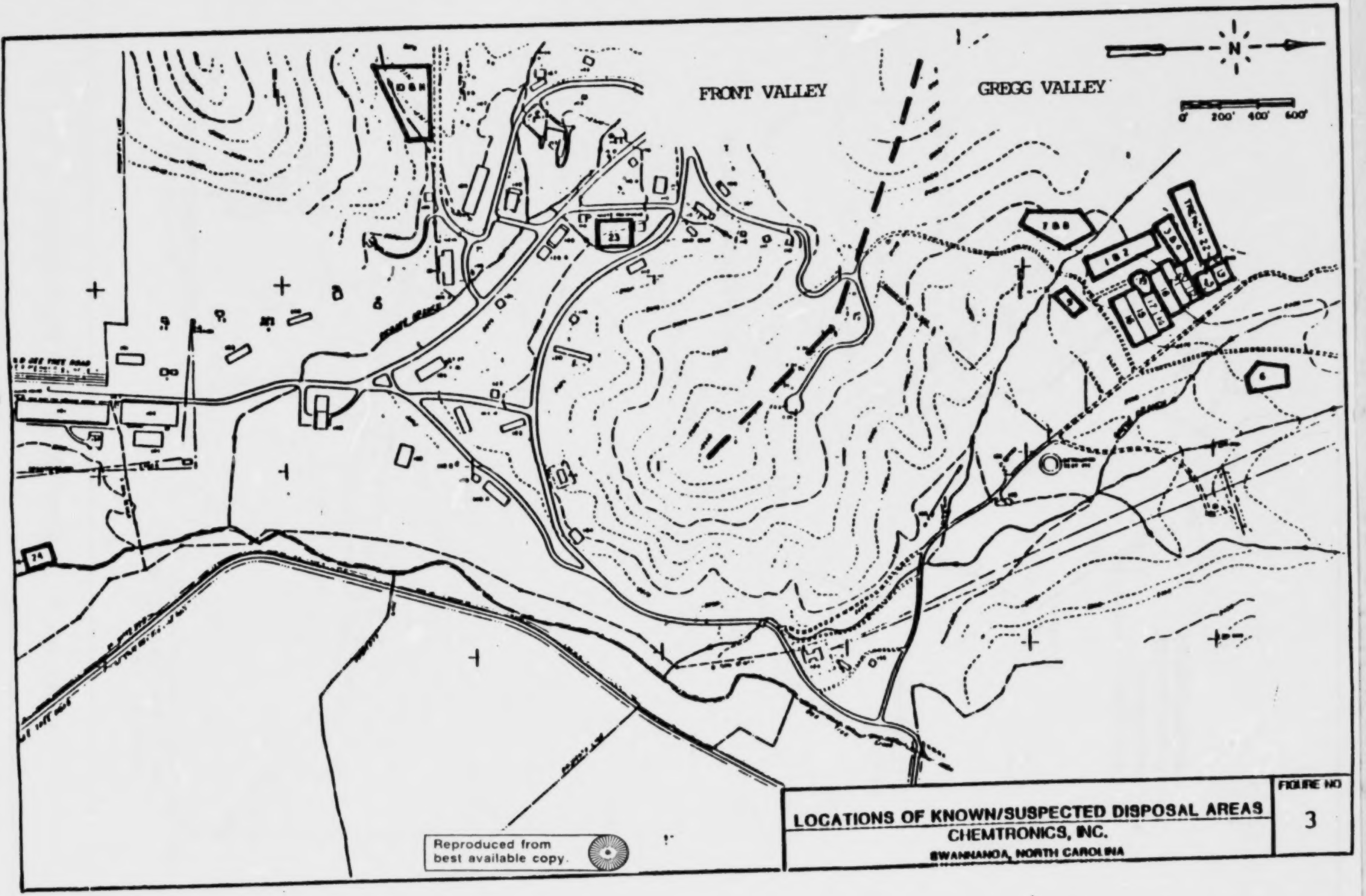
Waste disposal occurred over a small portion (approximately than ten acres) of the Site. Twenty-three individual on-site disposal areas were identified and described by reviewing existing records and through interviews with former and current Site employees. These 23 individual disposal areas (DAs) are grouped into 6 discrete disposal areas: DA-6, DA-7/8, DA-9, DA-10/11, DA-23, and the Acid Pit Area. The Site can also be divided into two geographical subsections; they will be referred to as the Front Valley and Gregg Valley. The locations of the 23 disposal areas and the two valleys are shown in Figure 3.

In the northwest corner of the Site, Figure 3, is a group of disposal areas that are collectively referred to as the Acid Pit Area. The acid pit area includes Disposal Areas 1, 2, 3, 4, 5, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and Trench 22. The acid pit area along with DA-6, DA-7/8 and DA-9 are located in Gregg Valley. Disposal areas DA-10/11 and DA-23 are located in the Front Valley.

The acid pit area was first used as the burning grounds as described in the following pages. This area, as well as all of the other disposal areas, were used by more than one of the site owner/operators.

In addition to investigating the on-site disposal areas for contamination, three off-site areas were also investigated (Figure 4). One disposal area, designated DA-24, lies on a tract of land that was once a part of the original acreage. This tract of land was sold in the 1970's and is now owned by another industry. The other two off-site areas investigated as part of the RI were local municipal landfills that were operated by the Buncombe County back in the 1970's. These two landfills, referred to as the Buckeye/Walnut Cove (B/WC) Landfill and the Tropigas Landfill, reportedly received waste from the Site as well as from other industrial facilities in the vicinity. Eight additional areas on-site were sampled since sufficient information was collected to indicate these areas as possible areas of contamination.

Disposal practices prior to 1971 are not well defined. From 1952 to 1971, solid waste materials and possibly solvents were incinerated in pits dug in the burning ground. Chemical wastes were disposed of in trenches beside this burning ground. Waste materials generated in the production of the incapacitating, surety agent, 3-quinuclidinyl benzilate (BZ) and the tear gas agent, o-chlorobenzylidene malononitrile (CS), were placed in 55 gallon, rim-lid drums, reportedly covered with decontamination "kill" solution and then buried on-site in trench-type landfills. These kill solutions neutralized the BZ and CS compounds. These drums were disposed of in disposal areas DA-6, DA-7/8, DA-9, and DA-10/11.


N
0' 200' 400' 600'
FRONT VALLEY
GREGG VALLEY
TRENCH 22
3&4
1&2
7&8
5
6
16
17
18
19
23
24
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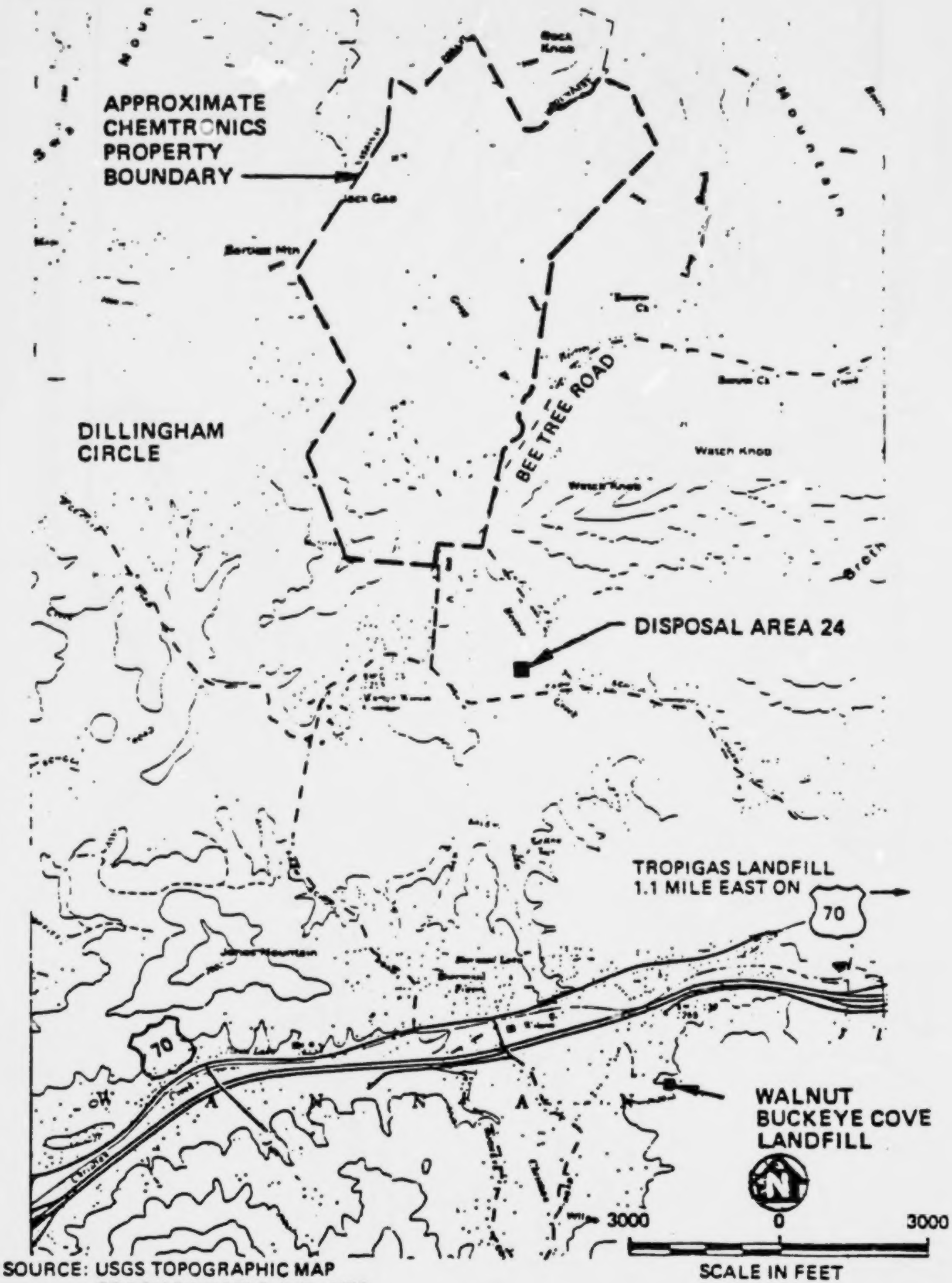
LOCATIONS OF KNOWN/SUSPECTED DISPOSAL AREAS
CHEMTRONICS, INC.
SWANNANOA, NORTH CAROLINA

FIGURE NO
3


APPROXIMATE CHEMTRONICS PROPERTY BOUNDARY
Jack Gap
Bartlett Mtn
DILLINGHAM CIRCLE
BEE TREE ROAD
Watch Knob
DISPOSAL AREA 24
TROPIGAS LANDFILL 1.1 MILE EAST ON 70
70
Jones Mountain
WALNUT BUCKEYE COVE LANDFILL
N
3000
0
3000
SCALE IN FEET

SOURCE: USGS TOPOGRAPHIC MAP
GRAGY PINNACLE, N.C., 1978
OTEEN, N.C., 1962

FIGURE NO. 4 LOCATIONS OF OFF-SITE AREAS SAMPLED

From 1971-1975, most of the liquid wastes generated on-site went to the Buncombe County Sewer System following some form of neutralization and equalization. Small volumes were disposed of in on-site pits/trenches. Solid wastes, rocket motors, explosive wastes, etc., were all burned in the burning ground. From 1975-1979, Chemtronics, Inc. constructed pits/trenches, as needed, for the disposal of spent acid and various organic wastes. These pits/trenches were constructed in the area that was once the burning ground, now referred to as the Acid Pit Area.

In 1980, the State ordered Chemtronics to discontinue all discharges to these disposal pits/trenches. The pits have subsequently been back-filled. Consequently, in 1979, Chemtronics installed a 500,000 gallon lined lagoon for biotreatment of wastewaters on top of an abandoned leach field for the main production/processing building (Building 113). After the lagoon was filled, the lagoon lost its contents due to the incompatibility of the liner with the brominated waste initially introduced into the lagoon. Reconstruction of the biolagoon, with a different liner, was completed in August 1980 and was in use up to 1984 at which time the biolagoon was deactivated. This entire area, including the abandoned leach field and the biolagoon, has been designated as DA-23.

The Site has been the subject of two previous Region IV, USEPA planned investigations, an investigation by the U.S. Army and an emergency response action by Region IV, USEPA. In June 1980, groundwater, surface water, sediment, and waste samples were collected for analysis. In April 1984, private water supply wells in the vicinity of the Site were sampled. In September 1984, the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) collected samples from two drums exposed at the surface in DA-10/11. These two drums were suspected of containing wastes from the production of the chemical warfare agent BZ. Although no BZ was found, in January 1985, an immediate removal of the same two exposed drums was initiated by EPA due to heightened public awareness/involvement with the Site. The drums were sampled and then transported to GSX, Pinewood facility, South Carolina.

2.0 ENFORCEMENT ANALYSIS

The Chemtronics Site was included on the first NPL in December 1982, and EPA assumed lead responsibility for the Site at that time. The Site has been operated as an industrial facility since 1952. An EPA contractor completed a Potentially Responsible Party (PRP) search in November 1983. Notice Letters were sent to the six identified PRPs. Three of the PRPs were found to be viable and EPA initiated negotiations with these three PRPs. Negotiations began in June 1984 and were concluded in October 1985 with two of the PRPs, Chemtronics, Inc. and Northrop Corporation, signing an Administrative Order of Consent to perform an RI/FS. The third PRP, Hoechst Celanese Corporation declined to participate in the RI/FS process.

3.0 CURRENT SITE STATUS

The Site is an active facility with the majority of manufacturing activities occurring in the Front Valley.

3.1 HYDROGEOLOGIC SETTING

The Chemtronics Site lies within the Blue Ridge geologic province. The Blue Ridge province is predominantly composed of ancient igneous and metamorphic rocks. These rocks have been complexly folded and faulted in a northeasterly direction, parallel to the regional trend of the mountains. These structural and metamorphic imprints are reflected in the topographic and drainage patterns within the region.

There are no known geologic faults or shear zones within two miles of the Site, and the Brevard Fault Zone lies about seven miles south of the Site. The Site property is underlain almost entirely by biotite gneiss.

In the Front Valley, the bedrock topography is reflected in the surface topography and has a shape similar to an elongated bowl or trough. The center of the bedrock trough coincides roughly with the center of the topographic valley and this is where the overburden is thickest (65 to 90 feet). Bedrock elevations increase with the surface topography and the overburden decreases as slopes steepen. The thickening of the overburden in the valley is most likely due to natural weathering processes.

In Gregg Valley, the bedrock topography is more complex and is not always reflected by the surface topography. For example, a steep bedrock slope was identified in the northeastern corner of the acid pit area but is not reflected by the surface topography. There is also a bedrock trough near the middle of the acid pit area which has no surface expression. Reshaping of the topography by man in this area is most likely responsible for masking these bedrock features. Elsewhere in Gregg Valley, the bedrock topography is reflected by the surface topography. As in the Front Valley, overburden in Gregg Valley thickens in its central and lower portions.

Groundwater recharge in this area is derived primarily from local precipitation. Generally, the depth of the water table depends on the topography and rock weathering. The water table varies from the ground surface in the valleys (streams) to more than 40 feet below the ground surface in sharply rising slopes.

The aquifer underlying the Site can be subdivided into a surficial zone and a bedrock zone. The surficial zone refers to the overlying saprolite and the bedrock zone includes the weathered and fractured region of the bedrock. These two zones are considered one aquifer as it was demonstrated in the RI that these zones are interconnected.

The groundwater underlying the Site has been classified as Class IIB, using USEPA Groundwater Classifications Guidelines of December 1986, since there is potential future use for this aquifer as a source of drinking water. Therefore, the groundwater needs to be remediated to levels protective of public health and where appropriate, to levels protective of the environment.

3.2 SITE CONTAMINATION

The field work associated with the RI for the Chemtronics Site centered on numerous known disposal areas on-site, eight other possible areas of contamination on-site and three off-site areas that reportedly received waste material from the Site. Soil, groundwater, surface water and sediment samples were collected in and around these areas and initially analyzed for the compounds on the Hazardous Substance List (HSL) as well as other selected compounds. After reviewing the analytical data from the HSL scans, indicator parameters were then selected to be run on subsequent samples and sampling episodes.

The indicator compounds selected were:

- Volatile Organic Priority Pollutants
    - Benzene
    - 1,2-Dichloroethane
    - Methylene chloride
    - Tetrachloroethene
    - Toluene
    - Trichloroethene/Trichloroethylene
    - Trihalomethanes
        - Bromoform
        - Chloroform

- Explosives
    - Picric Acid
    - RDX
    - TNT

- Chemical Agents
    - BZ
    - CS
    - and their degradative compounds

- Metals
    - Chromium
    - Nickel

The Agency approved the RI report in May 1987 which documented the presence as well as the level and extent of contaminants on-site. Contamination was found in the following media: surface and subsurface soils, surface water and sediment, and groundwater. In October 1987, the PRPs resampled 12 monitor wells in an attempt to verify and confirm the levels and extent of contamination in the groundwater. The analytical data indicates that, to date, no contamination has migrated pass the Site's boundaries although plumes of contamination in the groundwater have been found emanating from several of the disposal areas.

Samples collected from the three off-site areas indicated the absence of hazardous substances in these areas. The sampling included surface and subsurface soil samples. Surface water and sediment and groundwater samples were collected only at the Tropigas Landfill. These transport media were not sampled at the other two off-site areas because they were not encountered.

3.3 AIR CONTAMINATION

The most common source of air contamination at hazardous waste sites are the volatilization of toxic organic chemicals and the spread of airborne contaminated dust particles. During the recent RI, Site personnel used an HNu photoionization analyzer and cyanide sensitive colorimetric indicator tubes to monitor the air while performing the designated RI tasks. An action level of 5 ppm was established in the Chemtronics Project Operations Plan (POP) and Health & Safety Plan. This level was only attained during the excavation of the test pits in the disposal areas. The 5 ppm action level was surpassed on several occasions when the HNu was placed in the test pit or near exposed waste material unearthed during the excavation of the test pits. No cyanide was detected by the colorimetric tube.

3.4 SOIL CONTAMINATION

The study of the soil, surface and subsurface, occurred in two parts. The first task encompassed the excavation of test pits in the majority of the known disposal areas and the second task centered on the collection of surface and subsurface soil samples from borings drilled in and around the disposal areas. These activities not only allowed the determination of the depth of the disposed wastes but also provided data to determine the extent, vertically and horizontally, that the contaminants have migrated in the soil. The three disposal areas where test pits were not excavated were in DA-9, DA-23 and the Acid Pit Area.

3.4.1 SOIL CONTAMINATION IN THE FRONT VALLEY

The Front Valley contains two disposal areas, DA-10/11 and DA-23, where surface and subsurface soil samples were collected and analyzed. Below briefly describes the contaminants present in each disposal area.

DA 10/11

The analytes detected in and around DA-10/11 include volatile organic priority pollutants, extractable organic priority pollutants, the pesticide 4,4,4′-DDD, RDX, CS, total organic halide, and total cyanide. The sampling location and method of sampling (i.e., soil boring vs. test pit) are shown in Figure 5. The analytes found are listed in Table 1. Along with the maximum concentration found, Table 1 also identifies where the contaminants were found as well as the frequency of their occurrence among both on-site and off-site samples analyzed.

DA-23

The analytes detected in and around DA-23 included volatile organic priority pollutants, explosives, CS, BZ, and their degradative products, total organic halides, and total cyanide. The sampling locations are shown in Figure 6. The analytes found are listed in Table 2 along with the maximum concentrations. Table 2 also identifies where the contaminants were found as well as the frequency of their occurrence among both on-site and off-site samples.

3.4.2 SOIL CONTAMINATION IN GREGG VALLEY

Gregg Valley contains several disposal areas: DA-6, DA-7/8, DA-9, and the Acid Pit Area. Soil samples were collected from each of these areas for analysis. Below briefly describes the contaminants present in and around each disposal area.

DA-6

The analytes found associated with DA-6 are methylene chloride, lead, and the BZ degradation product benzylic acid/benzophenone. Figure 7 locates where the samples were collected and Table 3 provides the maximum detected concentrations, the locations where these concentrations were found and the frequency of occurrence among both on-site and off-site samples.

DA-7/8

Samples were collected from and around DA-7/8 were analyzed for volatile and extractable priority pollutants, explosives, metals, total organic halide, pH, total cyanide, and pesticides/PCBs. Selected samples were analyzed for CS, BZ and their degradative products. Figure 8 show the location of the soil samples collected in and around DA-7/8. The analytes detected are listed in Table 4. Boring locations at which maximum concentration were observed are also included in Table 4 along with the frequency of occurrence from both the on-site and off-site samples.

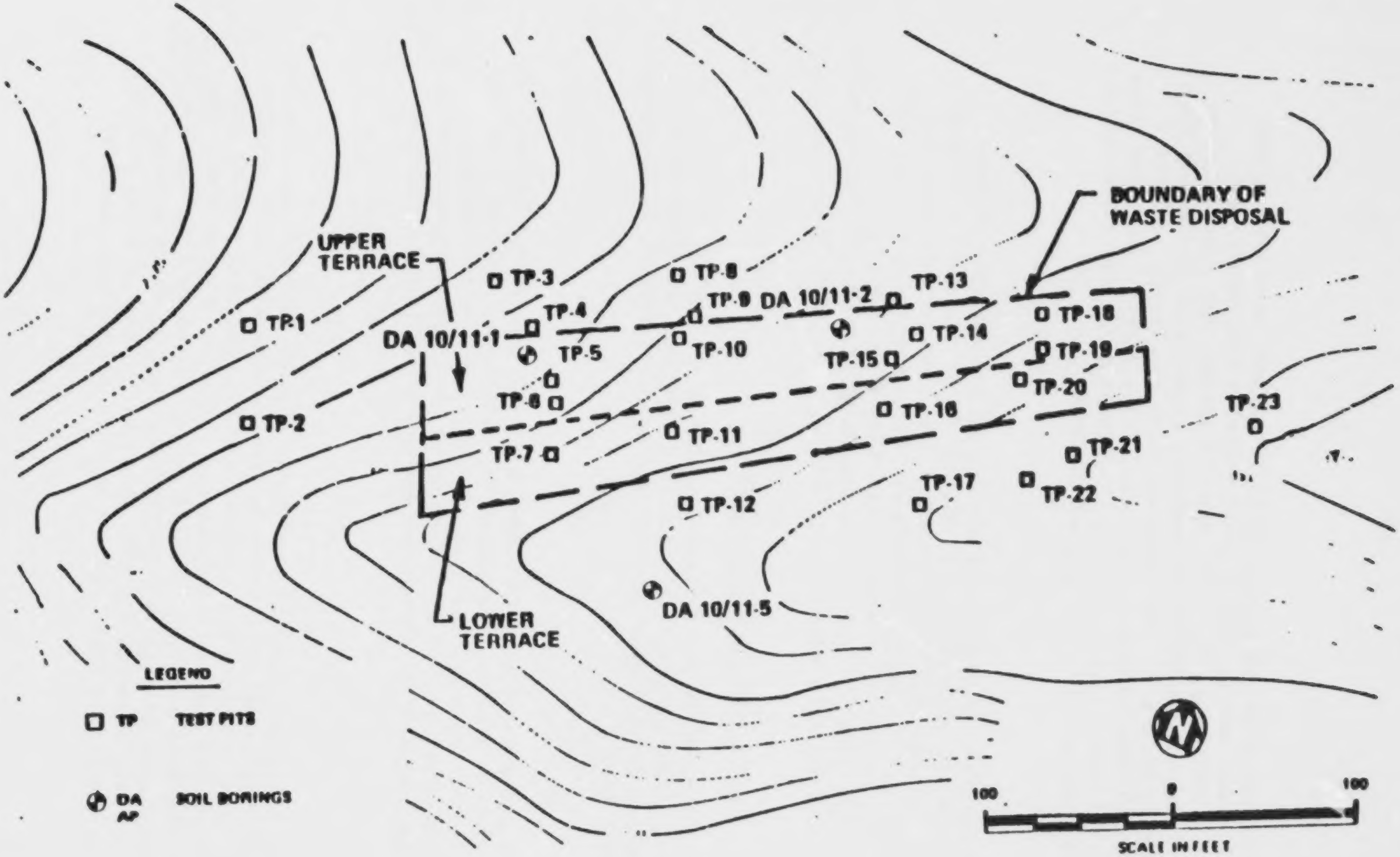

BOUNDARY OF WASTE DISPOSAL
UPPER TERRACE
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
TP-11
TP-12
TP-13
TP-14
TP-15
TP-16
TP-17
TP-18
TP-19
TP-20
TP-21
TP-22
TP-23
DA 10/11-1
DA 10/11-2
DA 10/11-5
LOWER TERRACE
LEGEND
TP TEST PITS
DA AP SOIL BORINGS
N
100
0
100
SCALE IN FEET

FIGURE NO. 5 LOCATIONS OF SURFACE/SUBSURFACE SOIL SAMPLES IN AND AROUND DISPOSAL AREA 10/11

TABLE NO. 1 CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH DISPOSAL AREA 10/11

Compound Detected	Maxium Detected Concentration (mq/Kq)	Location of Maxium Detected Concentration	Boring Interval Sample Depth (ft)	% of Samples Analyzed(1) in Which Compound Was Detected	
				On-site	Off-site
Volatile Organic Priority Pollutants					
Toluene	21,000.0	DA 10/11 TP-11	CSS	17	N/A
Methylene chloride	0.110	DA 10/11	1 (5-9)	92	N/A
1,2-Dichloroethane	0.032	DA 10/11	4 (20-22)	25	N/A
Extractable Organic Priority Pollutants					
Dibutyl phthalate	58.0	DA 10/11 TP-11	CSS	8	N/A
Benzo(a)anthracene	<10.0	DA 10/11 TP-14	CSS	8	N/A
Pesticides/PCB's					
4,4,4-DDD	0.021	DA 10/11 TP-14	CSS	8	N/A
Explosives					
RDX	290.0	DA 10/11 TP-14	CSS	25	0
CS, BZ & Degradation Products					
CS	1.50	DA 10/11 TP-7	CSS	8	0
Total Organic Halides	1.0	DA 10/11 TP-7	CSS	8	0
Total Cyanide	3.98	DA 10/11 TP-14	CSS	92	22

DA = Disposal Area
TP = Test Pit
N/A = Not Analyzed
CSS = Composite Soil Sample

(1)	On-site	Off-site
Number of locations sampled	25	4
Number of samples collected	41	32
Number of samples analyzed	12	18

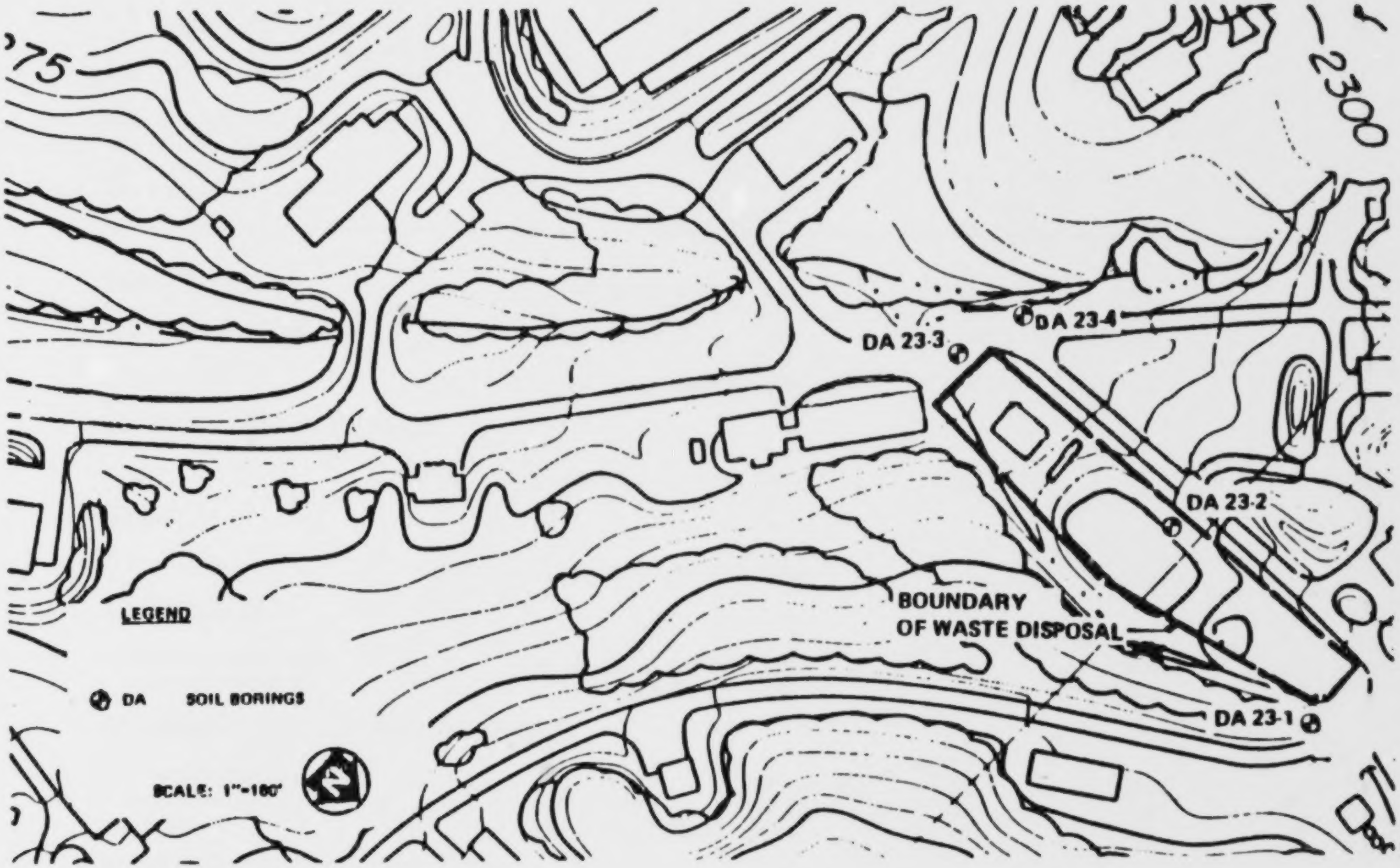

2300
275
DA 23-4
DA 23-3
DA 23-2
DA 23-1
BOUNDARY OF WASTE DISPOSAL
LEGEND
DA SOIL BORINGS
SCALE: 1"-100'
N

FIGURE NO. 6 LOCATIONS OF SURFACE/SUBSURFACE SOIL SAMPLES IN AND AROUND DISPOSAL AREA 23

TABLE NO. 2 CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH DISPOSAL AREA 23

Compound Detected	Maxium Detected Concentration (mg/Kg)	Location of Maxium Detected Concentration	Boring Interval Sample Depth (ft)	% of Samples Analyzed in Which Compound Was Detected: On-site	% of Samples Analyzed in Which Compound Was Detected: Off-site
Volatile Organic Priority Pollutants(1)					
Toluene	0.014	DA 23-2	#2 (10-12)	25	0
Methylene chloride	0.140	DA 23-4	#2 (45-85)	100	100
1,2-Dichloroethane	2.70	DA 23-2	#4 (25-27)	100	29
Chloroform	0.011	DA 23-2	#2 (10-12)	25	0
Ethyl Benzene, tetrachloroethene	<0.01	DA 23-2	#2 (10-12)	25	0
Explosives(2)					
TNT	0.6 0.5	DA 23-2 DA 23-2	#1 (5-9) #2 (10-12)	50	N/A
CS, BZ & Degradation Products Total Organic Halides(2)					
Benzylic Acid/ Benzophenone	9.0 3.6 1.9	DA 23-2 DA 23-2 DA 23-2	#1 (5-9) #2 (10-12) #2 (10-12)	75	6
Total Organic Halides(2)	11.0	DA 23-2	#3 (15-19) (20-22)	25	N/A
Total Cyanide(2)	0.18 0.58	DA 23-4 DA 23-4	#1 (0-2) #2 (4.5-8.5)	25	24

DA = Disposal Area
N/A = Not Analyzed

(1)		On-site	Off-site
	Number of locations sampled	4	3
	Number of samples collected	4	30
	Number of samples analyzed	4	17

(2)		On-site	Off-site
	Number of locations sampled	1	3
	Number of samples collected	4	30
	Number of samples analyzed	4	17

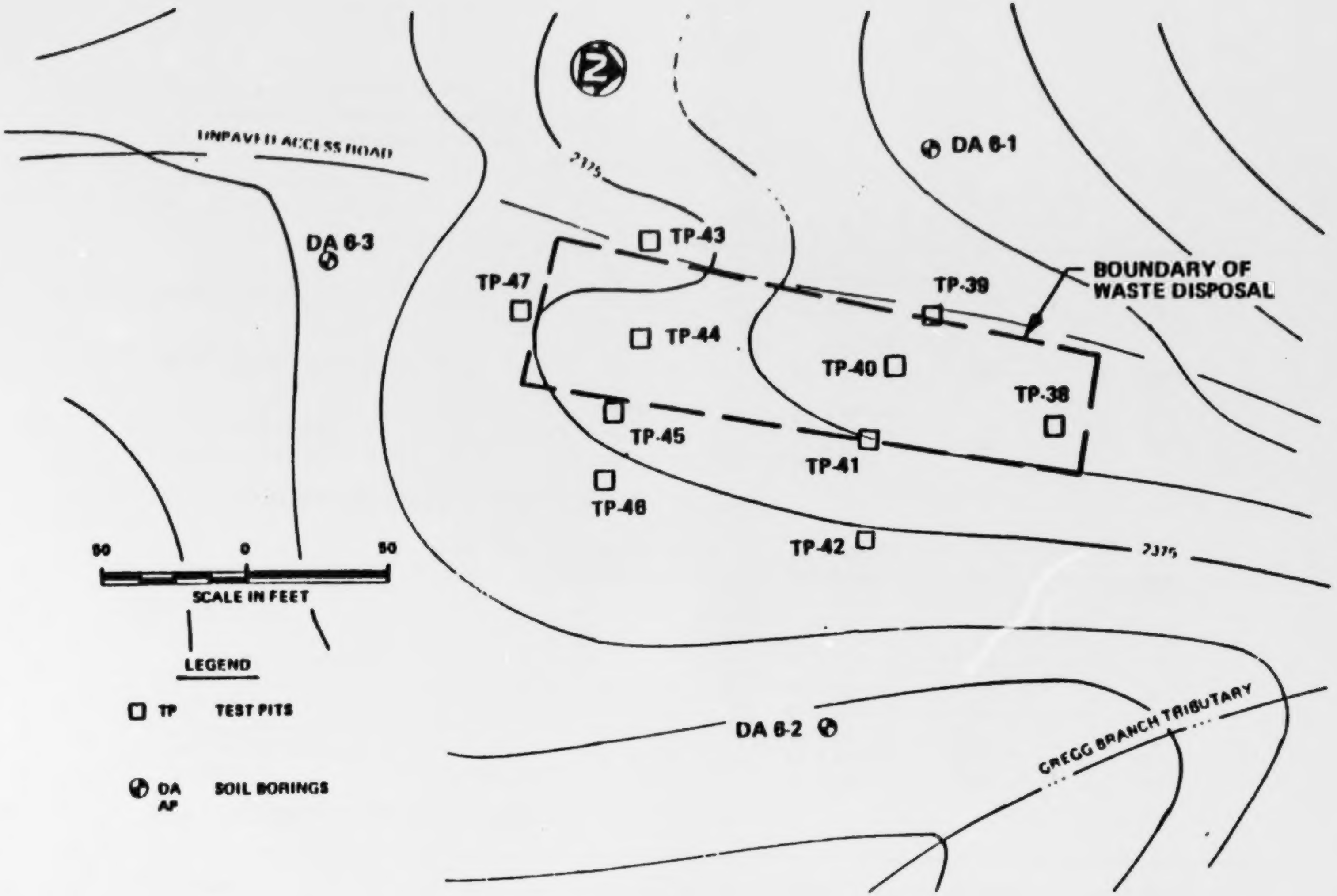

UNPAVED ACCESS ROAD
2375
DA 6-1
DA 6-3
TP-43
TP-47
TP-44
TP-39
BOUNDARY OF WASTE DISPOSAL
TP-40
TP-38
TP-45
TP-41
TP-46
TP-42
2375
50
0
50
SCALE IN FEET
LEGEND
☐ TP TEST PITS
DA AP SOIL BORINGS
DA 6-2
GREGG BRANCH TRIBUTARY

FIGURE NO. 7 LOCATIONS OF SURFACE/SUBSURFACE SOIL SAMPLES IN AND AROUND DISPOSAL AREA 6

TABLE NO. 3 CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH DISPOSAL AREA 6

Compound Detected	Maxium Detected Concentration (mg/Kg)	Location of Maxium Detected Concentration	Boring Interval Sample Depth (ft)	% of Samples Analyzed(1) in Which Compound Was Detected	
				On-site	Off-site
Volatile Organic Priority Pollutants					
Methylene chloride	0.013	6 TP 38, 40 and 44	CSS	100	N/A
Metals*					
Lead+	35.0 (30)	6 TP 43 and 49	CSS	100	N/A
CS, BZ & Degradation Products					
Benzylic Acid	<0.39	6 TP 38, 40 and 44	CSS	50	0
Benzophenone	<0.39	6 TP 38, 40 and 44	CSS	50	0

TP = Test Pit
N/A = Not Analyzed
CSS = Composite Soil Sample
* Metals listed are those detected at levels which exceed background concentrations
+ Background Concentration in Parentheses

(1)	On-site	Off-site
Number of locations sampled	10	3
Number of samples collected	10	21
Number of samples analyzed	2	9

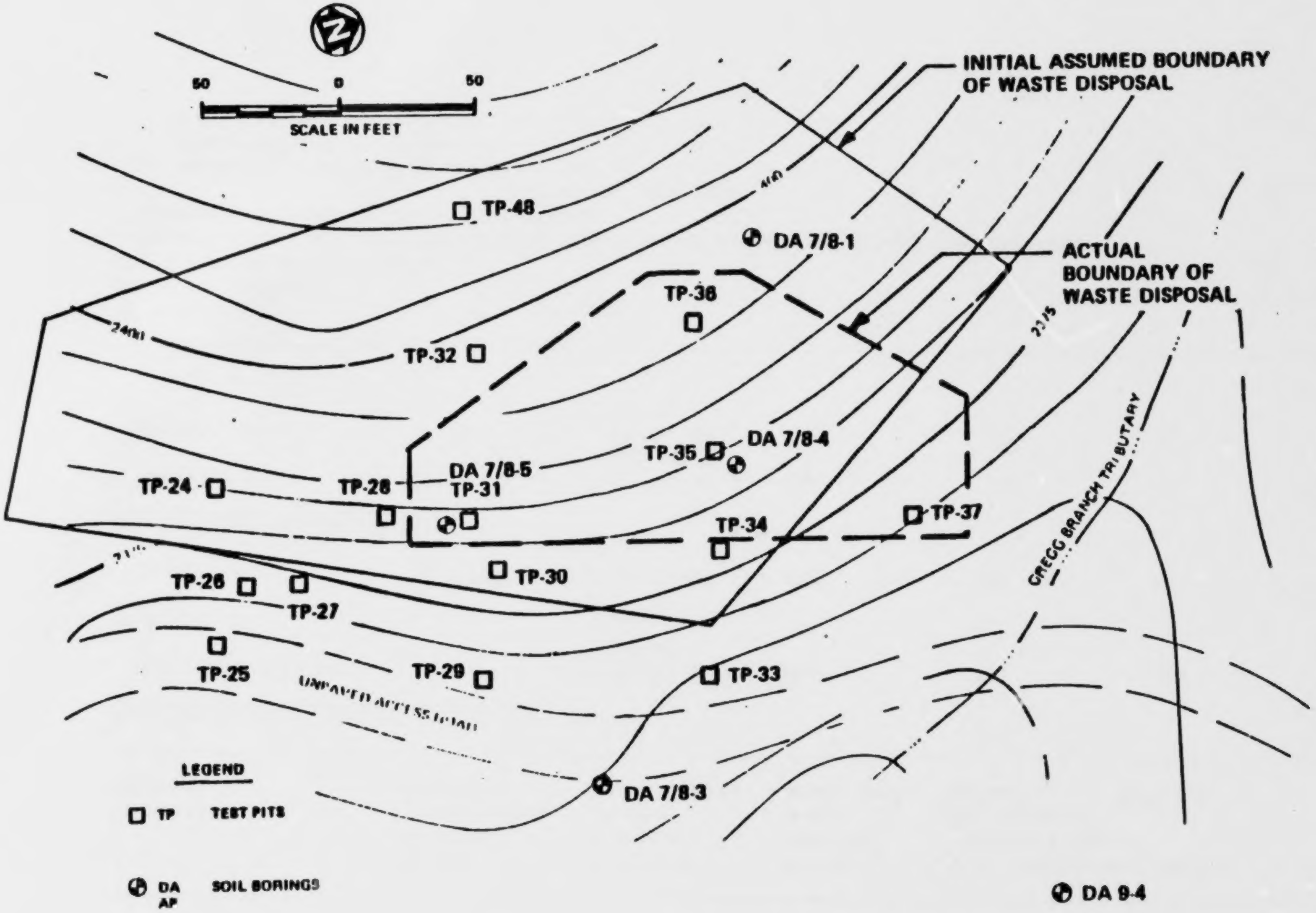

N
50
0
50
SCALE IN FEET
INITIAL ASSUMED BOUNDARY OF WASTE DISPOSAL
ACTUAL BOUNDARY OF WASTE DISPOSAL
TP-48
DA 7/8-1
TP-36
TP-32
TP-35
DA 7/8-4
DA 7/8-5
TP-31
TP-24
TP-28
TP-34
TP-37
TP-26
TP-27
TP-30
TP-25
TP-29
TP-33
UNPAVED ACCESS ROAD
GREGG BRANCH TRIBUTARY
DA 7/8-3
DA 9-4
LEGEND
TP TEST PITS
DA AP SOIL BORINGS

FIGURE NO. 8 LOCATIONS OF SURFACE/SUBSURFACE SOIL SAMPLES IN AND AROUND DISPOSAL AREA 7/8

TABLE NO. 4 CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH DISPOSAL AREA 7/8

Compound Detected	Maxium Detected Concentration (mg/Kg)	Location of Maxium Detected Concentration	Boring Interval Sample Depth (ft)	% of Samples Analyzed in Which Compound Was Detected	
				On-site	Off-site
Volatile Organic Priority Pollutants(1)					
Toluene	0.030	DA 7/8 TP 35 and 37	CSS	10	N/A
Methylene chloride	0.170	DA 7/8 4	#2 (25-27)	100	N/A
1,2-Dichloroethane	0.150	DA 7/8 TP 35 and 37	CSS	40	N/A
trans-1,2-dichloroethene	0.440	DA 7/8 TP 35 and 37	CSS	20	N/A
Ethyl benzene	0.045	DA 7/8 TP 35 and 37	CSS	10	N/A
Vinyl chloride	0.012	DA 7/8 TP 35 and 37	CSS	10	N/A
Extractable Organic Priority Pollutants(2)					
Bis(2-ethylhexyl) phthalate	1.0	DA 7/8 TP 35 and 37	CSS	10	N/A
Pesticides/PCB's(2)					
Aroclor 1242	0.1	DA 7/8 TP 31 and 36	CSS	10	N/A
Explosives(2)					
RDX	9.6	DA 7/8 TP 35 and 37	CSS	10	0
CS, BZ & Degradation Products(2)					
CS	3,100.0	DA 7/8 TP 35 and 37	CSS	10	0
Orthochloro benzaldehyde	7.6	DA 7/8 TP 35 and 37	CSS	10	0
Malononitile	<0.51	DA 7/8 TP 35 and 37	CSS	10	0

TABLE NO. 4 CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH DISPOSAL AREA 7/8
(continued)

Compound Detected	Maxium Detected Concentration (mg/Kg)	Location of Maxium Detected Concentration	Boring Interval Sample Depth (ft)	% of Samples Analyzed in Which Compound Was Detected	
				On-site	Off-site
Total Organic Halides(2)	270.0	DA 7/8 TP 35 and 37	CSS	10	0
Total Cyanide(2)	0.8	DA 7/8 TP 35 and 37	CSS	10	0
Metals*(2)					
Copper+	160.0 (110)	DA 7/8 TP 31 and 36	CSS	10	22
Chromium+	97.0 (57)	DA 7/8 TP 31 and 36	CSS	10	78
Lead+	32.0 (24)	DA 7/8 TP 35 and 37	CSS	10	N/A

DA = Disposal Area
TP = Test Pit
N/A = Not Analyzed
CSS = Composite Soil Sample
* Metals listed are those detected at levels which exceed background concentrations
+ Background Concentration in Parentheses

		On-site	Off-site
(1)	Number of locations sampled	9	13
	Number of samples collected	74	160
	Number of samples analyzed	62	79

		On-site	Off-site
(2)	Number of locations sampled	17	3
	Number of samples collected	22	20
	Number of samples analyzed	10	9

DA-9

The analytes found associated with DA-9 are listed in Table 5 along with the boring location at which the maximum concentration was observed and the frequency of occurrence from both on-site and off-site samples. Figure 9 situates where the samples were located in and around the disposal area.

ACID PIT AREA

The analytes detected in and around the Acid Pit Area include volatile organic priority pollutants, pesticides/PCBs, explosives, total cyanide, total organic halide, and metals. The analytical results are presented in Table 6. The analytes are listed with the boring location at which the maximum concentration was observed and the frequency of occurrence both inside and outside the presumed boundaries of the disposal area. Figure 10 provides the location of the soil borings in and around the acid pit area.

3.5 GROUNDWATER CONTAMINATION

All monitor wells were sampled in June 1986 as part of the RI. Twelve (12) of these wells were resampled in October 1987 in an attempt to verify concentrations.

3.5.1 GROUNDWATER CONTAMINATION IN THE FRONT VALLEY

Groundwater contamination in the surficial zone of the Front Valley exists primarily in the area downgradient of DA-23, the old leach field for Building 113 and the biolagoon. Other portions of the aquifer in this valley also appear to have been adversely affected but the source of contamination in these areas cannot be clearly defined. In each of these locations, volatile organic priority pollutants are present.

The following discussion is based on the samples analyzed as part of the RI. Figures 11 and 12 locate the monitor wells associated with DA-10/11 and identifies the contaminants and their concentrations found during the RI. The results of the October 1987 sampling episode are also included on these figures, where appropriate. The analytical data is also tabulated; Table 7 is for DA-10/11 and Table 8 is for DA-23.

As can be seen from Figures 10 and 11, there is no groundwater contamination immediately downgradient of DA-10/11. The contaminants identified in surficial monitor well #5 (SW-5) and bedrock monitor well #5 (BW-5) are due to disposal area DA-23 as explained below.

The highest concentrations of volatile organics in the groundwater were detected in monitor wells downgradient of DA-23 as shown in Figure 13. Concentrations of 1,2-dichloroethane range from 0.15 to 7.4 mg/L. In this area, higher concentrations of volatiles were also detected in the deeper portion of the aquifer, indicating downward as well as lateral migration of the contaminants. 1,2-Dichloroethane was also detected in stream sample RW-7

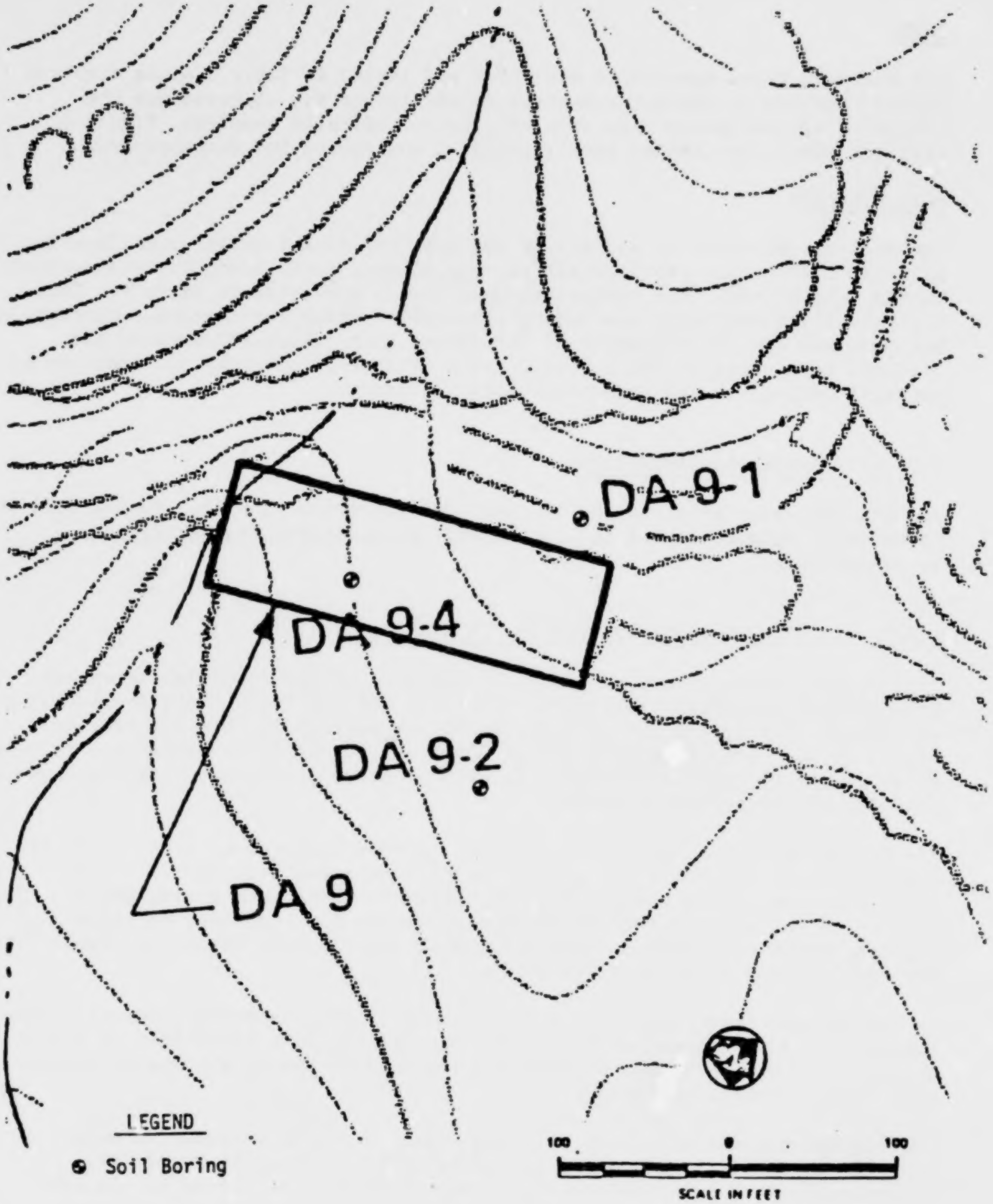

DA 9-1
DA 9-4
DA 9-2
DA 9
LEGEND
⊕ Soil Boring
100
0
100
SCALE IN FEET

FIGURE NO. 9 LOCATIONS OF SURFACE/SUBSURFACE SOIL SAMPLES IN AND AROUND DISPOSAL AREA 9

TABLE NO. 5 CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH DISPOSAL AREA 9

Compound Detected	Maxium Detected Concentration (mg/Kg)	Location of Maxium Detected Concentration	Boring Interval Sample Depth (ft)	% of Samples Analyzed in Which Compound Was Detected	
				On-site	Off-site
Volatile Organic Priority Pollutants					
Trichloroethylene	3.2	DA 9-4	#2 (4-10)	88	5
1,2-dichloroethane	1.8	DA 9-4	#3 (14-16)	63	25
Methylene Chloride	0.40	DA 9-2	#5 (24-36)	88	95
Tetrachloroethene	0.021	DA 9-6	SS	25	0
Extractable Organic Priority Pollutants					
Bis (2-ethylhexyl) phthalate	15.0	DA 9-4	#2 (4-10)	38	0
Pesticides/PCB's					
Aroclor	5.0	DA 9-4	#1 (0-4)	13	0
Explosives					
RDX	220	DA 9-6	SS	50	0
TNT	280	DA 9-6	SS	50	0
CS, BZ & Degradation Products					
CS	370	DA 9-6	SS	50	0
Orthochloro-benzaldehyde	22	DA 9-4	#2 (4-10)	63	0
Total Organic Halide	260	DA 9-4	#1 (0-4)	50	N/A
Total Cyanide	8.71	DA 9-6	SS	63	25

DA = Disposal Area
SS = Surface Soil Sample
N/A = Not Analyzed

(1)	On-site	Off-site
Number of locations sampled	3	3
Number of samples collected	10	35
Number of samples analyzed	8	20

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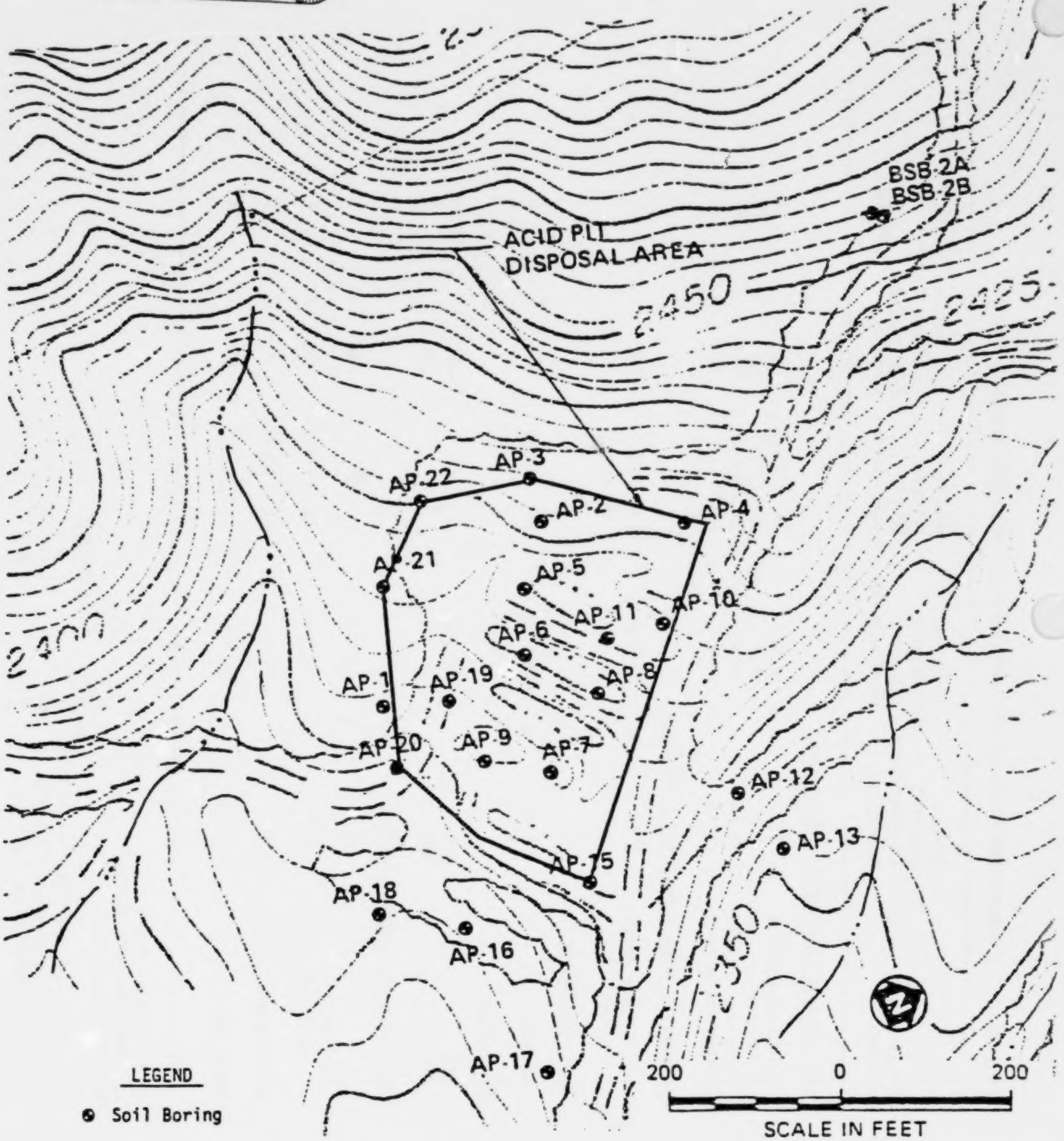
BSB-2A
BSB-2B
ACID PIT
DISPOSAL AREA
2450
2425
2400
2350
AP-3
AP-22
AP-2
AP-4
AP-21
AP-5
AP-10
AP-11
AP-6
AP-1
AP-19
AP-8
AP-20
AP-9
AP-7
AP-12
AP-13
AP-15
AP-18
AP-16
AP-17
N
200
0
200
SCALE IN FEET
LEGEND
⊗ Soil Boring

FIGURE NO. 10 LOCATIONS OF SURFACE/SUBSURFACE SOIL SAMPLES IN AND AROUND THE ACID PIT AREA

TABLE NO. 6 CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH THE ACID PIT DISPOSAL AREA

Compound Detected	Maxium Detected Concentration (mg/Kg)	Location of Maxium Detected Concentration	Boring Interval Sample Depth (ft)	% of Samples Analyzed in Which Compound Was Detected	
				On-site	Off-site
Volatile Organic Priority Pollutants					
1,2 Dichloroethane	46.0	AP-7	#3 (9-13)	61	33
Toluene	15.0	AP-7	#6 (24-26)	10	1
Trichloroethene	9.80	AP-7	#7 (29-31)	19	4
Ethyl benzene	1.80	AP-7	#3 (9-13)	10	3
Chloroform	1.20	AP-8	#6 (25-27)	10	5
Bromoform	0.51	AP-8	#2 (5-9)	10	1
Tetrachloroethene	0.31	AP-7	#3 (9-13)	16	0
Methylene Chloride	0.18	AP-4	#6 (27-29)	6	90
1,1,2-trichloroethane	0.13	AP-7	#3 (9-13)	85	0
Benzene	0.05	AP-7	#3 (9-13)	3	1
1,1,1-trichloroethane	0.032	AP-18	#2 (4-16)	3	1
Trans-1,2-dichloroethene	0.028	AP-19	#8 (35-37)	0	0
Bromomethane	0.016	AP-7	#9 (39-41)	2	0
Chlorobenzene	0.010	AP-7	#4 (14-16)	2	0
Pesticides/PCB's					
- Endosulfan	160.0	AP-9	#2 (5-9)	2	N/A
Heptachlor	130.0	AP-9	#2 (5-9)	2	N/A
- BHC	57.0	AP-5	#3 (28-29)	6	N/A
- BHC	13.0	AP-9	#1 (0-2)	2	N/A
- BHC (Lindane)	7.9	AP-11	#4 (14-18)	2	N/A
4,4' - DDT	6.6	AP-4	#3 (10-14)	2	N/A
Dieldrin	0.13	AP-5	#1 (0-2)	2	N/A
- BHC	0.072	AP-3	#1 (0-2)	2	N/A

TABLE NO. 6 CONTAMINANTS FOUND IN SOIL SAMPLES ASSOCIATED WITH THE ACID PIT DISPOSAL AREA
(continued)

Compound Detected	Maxium Detected Concentration (mg/Kg)	Location of Maxium Detected Concentration	Boring Interval Sample Depth (ft)	% of Samples Analyzed in Which Compound Was Detected	
				On-site	Off-site
Explosives					
Picric Acid	22.0	AP-8	#6 (25-27)	6	N/A
2,4,6 TNT	0.8	AP-3	#1 (0-2)	3	N/A
Total Organic Halides	8,300.0	AP-4	#2 (5-9)	32	N/A
Total Cyanide	2.20	AP-7	#6 (24-26)	79	5
Metals*					
Arsenic	100.0 (56)	AP-4	#4 (15-17)	8	0
Chromium	72.0 (57)	AP-3	#2 (5-9)	6	N/A
Lead	38.0 (30)	AP-3	#5 (20-21)	3	N/A
Zinc	120.0 (100)	AP-3	#5 (20-21)	3	N/A
Thallium	110.0 (†)	AP-7	#2 (4-8)	2	N/A

AP = Acid Pit Area
N/A = Not Analyzed
CSS = Composite Soil Sample
* Metals listed are those detected at levels which exceed background concentrations
+ Backgound Concentration in Parentheses
† Below detection limit

(Figure 13) indicating that this compound is discharging with groundwater in this vicinity into the northern tributary of the unnamed branch.

Lower concentrations of two other volatile organic compounds were also detected in this area, specifically, 0.11 mg/L of chloroform in monitor well (MW) SW-4 and 0.013 mg/L of trans-1,2-dichloroethene in MW M85L-4.

Benzylic acid, a degradative compound of BZ, was detected in MW SW-4 at 470 mg/L (Figure 14). This implies that BZ derivatives have migrated downgradient with the groundwater from the Building 113 leach field. RDX and picric acid were also detected in the groundwater downgradient of DA-23. A concentration of 0.046 mg/L of RDX in MW SW-6, which is located upgradient to DA-23, may indicate that this well is located near the abandoned tile drainage line leading from Building 113 to the leach field or within the upper boundary of the leach field itself. A low concentration of bis (2-ethylhexyl) phthalate was also detected in MW SW-6 (Figure 14).

Groundwater in the vicinity of MW SW-5, on the southwestern side of the unnamed branch, has also been adversely affected (Figures 13 and 14). Contaminants in this area include trichloroethene, RDX and trans 1,2-dichloroethane. According to groundwater flow patterns in the area, it is unlikely that these contaminants are coming from DA-23 or DA-10/11. It is feasible that these contaminants have migrated from the leach field of Building 107 (Figure 3) or are a result of other past activities or incidents within the upgradient area.

Lastly, 0.17 mg/L of trichloroethene was the only contaminant detected in the furthest downgradient MW M85L-11 (Figure 13). It is unlikely that this contaminant originated from DA-10/11 since this contaminant was not found in either monitor wells, SW-2 or SW-3 (Figure 11), both of which are immediately downgradient of DA-10/11. This is further supported by the fact that no trichloroethene contamination was detected in any of the soil borings samples (Table 1) collected from this area. The absence of trichloroethene in groundwater downgradient of DA-23 indicates that the source of trichloroethene in MW M85L-11 is not DA-23 (Figure 13) and is therefore, most likely due to some other past activity or incident.

In summary, the extent of the groundwater contamination in the surficial zone in the Front Valley is greatest downgradient of DA-23. The majority of contaminants from this area are migrating with the groundwater and discharging locally into a northern tributary of the unnamed branch. Groundwater contamination in other areas within the valley are most likely due to the presence of other old leach fields (such as that of Building 107) or other past activities. Finally, given that no contaminants were detected in groundwater samples collected from wells downgradient of DA-10/11 during the RI and only methylene chloride at 0.007 mg/L (Figure 11) in the October 1987 sampling episode, it appears that contaminants have not moved from this area.

The bedrock zone of the aquifer in the Front Valley contains three contaminants: 1,2-dichloroethane, bis (2-ethylhexyl) phthalate, and chloroform. The extent of this contamination is in the vicinity of two wells, BW-4 and BW-5 (Figure 13 and 14). The contaminant detected in MW BW-5 was 1,2 dichloroethane at a concentration of 0.15 mg/L. The source of this contaminant

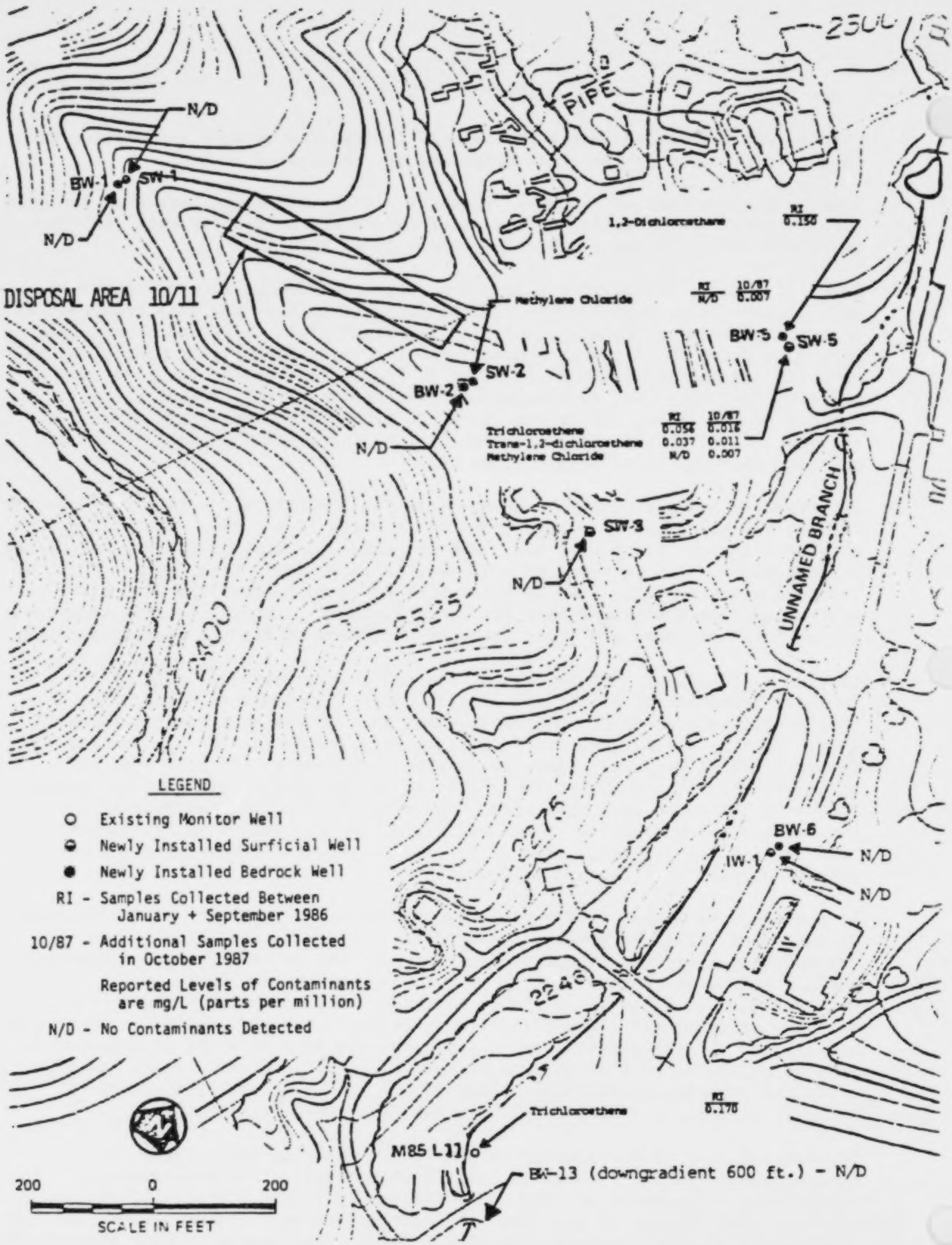
2500
PIPE
N/D
BW-1
SW-1
N/D
DISPOSAL AREA 10/11
1,2-Dichloroethene
RI
0.150
Methylene Chloride
RI
N/D
10/87
0.007
BW-5
SW-5
SW-2
BW-2
N/D
RI
10/87
Trichloroethene 0.056 0.016
Trans-1,2-dichloroethene 0.037 0.011
Methylene Chloride N/D 0.007
UNNAMED BRANCH
SW-3
N/D
2400
2325
2275
2248
BW-6
IW-1
N/D
N/D
LEGEND
○ Existing Monitor Well
● Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
Trichloroethene
RI
0.170
M85 L11
BW-13 (downgradient 600 ft.) - N/D
200
0
200
SCALE IN FEET

FIGURE NO. 11 LOCATIONS AND CONCENTRATIONS OF VOLATILE CONTAMINANTS ASSOCIATED WITH DISPOSAL AREA 10/11 FOUND IN THE GROUNDWATER IN THE FRONT VALLEY

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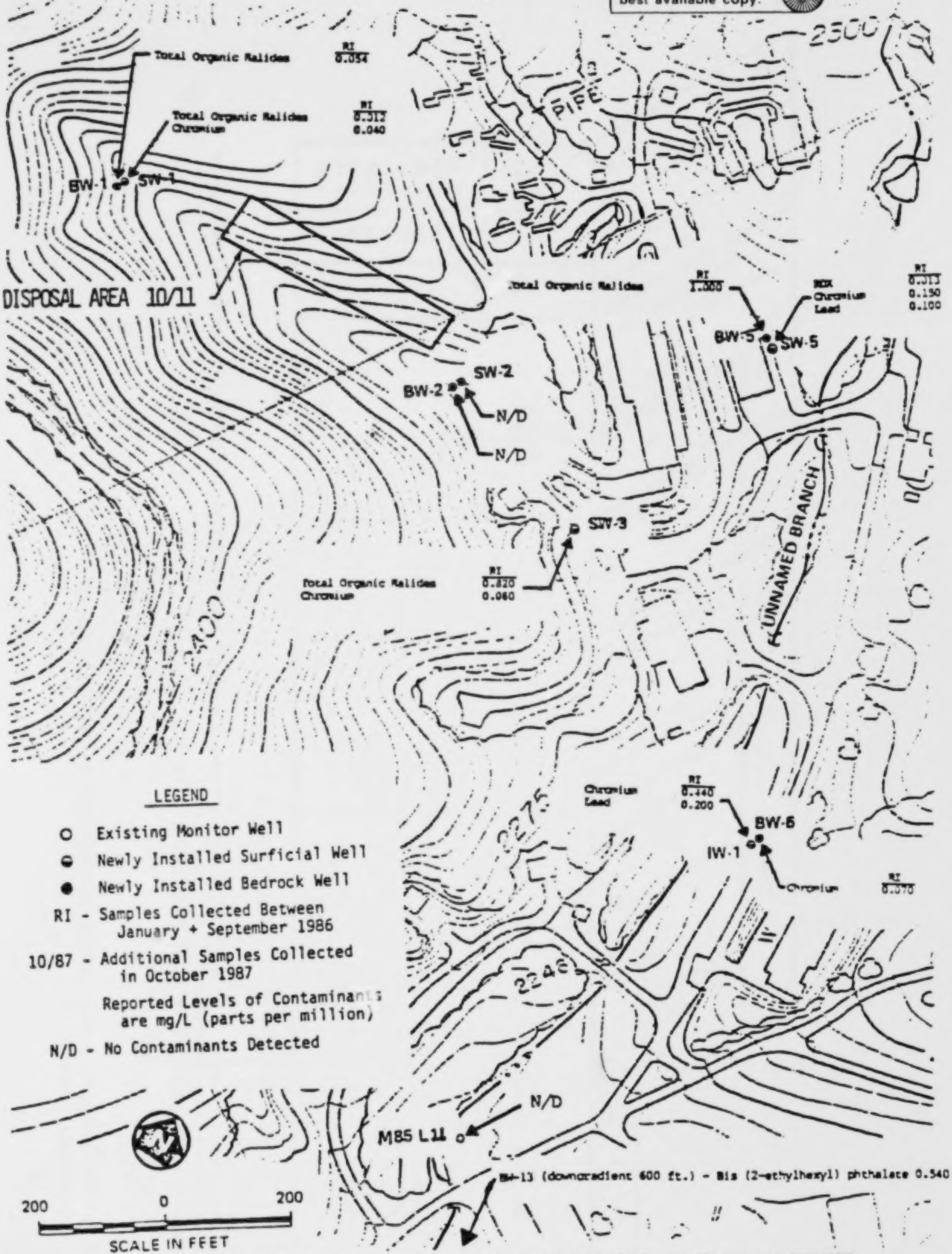
2300
PIPE
Total Organic Halides RI 0.054
Total Organic Halides RI 0.312
Chromium 0.040
BW-1
SW-1
DISPOSAL AREA 10/11
Total Organic Halides RI 1.000
BOX RI 0.313
Chromium 0.150
Lead 0.100
BW-5
SW-5
BW-2
SW-2
N/D
N/D
SW-3
Total Organic Halides RI 0.820
Chromium 0.060
UNNAMED BRANCH
2400
2275
Chromium RI 0.440
Lead 0.200
BW-6
IW-1
Chromium RI 0.070
2246
N/D
M85 L11
BW-13 (downgradient 600 ft.) - Bis (2-ethylhexyl) phthalate 0.540
LEGEND
○ Existing Monitor Well
⊖ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
N
200
0
200
SCALE IN FEET

FIGURE NO. 12 LOCATIONS AND CONCENTRATIONS OF NON-VOLATILE CONTAMINANTS ASSOCIATED WITH DISPOSAL AREA 10/11 FOUND IN THE GROUNDWATER IN THE FRONT VALLEY

Well Location	Well Type	Volatiles					Extractables		Explosives	Metal					
		Chloroform	Trichloroethylene	Methylene chloride	1,2-dichloroethane	Trans 1,2-dichloroethene	Bis (2-ethylhexyl) phthalate (2)	Di-n-octylphthalate (2)	RDX	Chromium	Total organic halide	Total cyanide	Pesticides/PCBs	CS/Bs	pH
Upgradient															
SW 1	Shallow	<0.01	-	-	-	-	<0.01	-	-	0.04	0.012	-	-	NA	7.18
BW 1	Bedrock	<0.01	-	-	-	-	0.052	-	-	•	0.054	-	-	NA	9.68
Downgradient															
SW 2	Shallow	-	-	-	-	-	-	<0.01	-	•	-	-	-	NA	6.10
SW 3	Shallow	-	-	-	-	-	-	-	-	0.06	0.82	-	-	NA	6.00
SW 5	Shallow	-	0.056	-	-	0.037	-	-	0.013	0.5	-	-	-	NA	6.20
IW 1	Intermediate	-	-	-	-	-	-	-	-	0.54	<0.01	-	-	NA	6.01
BW 2	Bedrock	-	-	-	-	-	<0.01	-	-	-	-	-	-	-	5.48
BW 5	Bedrock	-	-	-	0.15	-	<0.01	-	-	•	1.0	-	-	NA	8.04
BW 6	Bedrock	<0.01	<0.01	0.130	<0.01	-	<0.01	-	-	0.07	-	-	-	NA	6.53
BW 13	Bedrock	<0.01	-	-	-	-	0.040	-	-	-	-	-	-	-	7.45
MB5L11	Existing	-	0.170	-	-	-	-	-	-	-	8.9*	-	-	NA	6.41

* : qualified data - : not detected

NA : not analyzed • : detected but not at significant levels

(1) Number of wells in this area: 11

(2) Phthalate concentrations are assumed to be the result of contact between groundwater and phthalate-containing materials during well installation or handling and analysis in the laboratory.

(3) Contaminant Levels Measured in mg/L (parts per million)

TABLE NO. 7 CONTAMINANTS FOUND IN THE GROUNDWATER IN THE VICINITY OF DISPOSAL AREA 10/11

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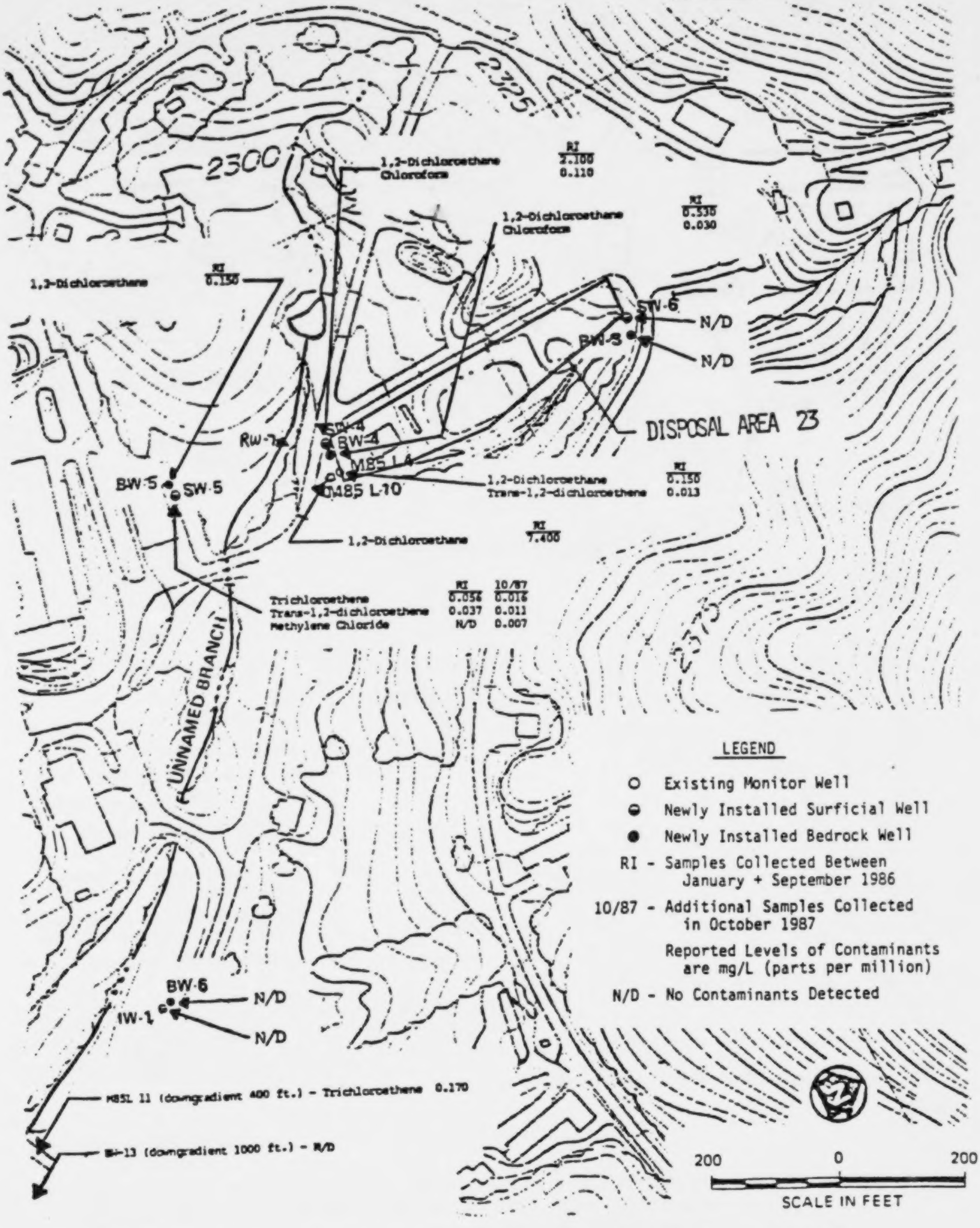
2300
2325
2375
1,2-Dichloroethane
Chloroform
RI
2.100
0.110
1,2-Dichloroethane
Chloroform
RI
0.530
0.030
1,2-Dichloroethane
RI
0.150
SW-6
N/D
BW-3
N/D
DISPOSAL AREA 23
RW-7
SW-4
BW-4
M85 L4
BW-5
SW-5
M85 L-10
1,2-Dichloroethane
Trans-1,2-dichloroethene
RI
0.150
0.013
1,2-Dichloroethane
RI
7.400
Trichloroethene
Trans-1,2-dichloroethene
Methylene Chloride
RI
0.056
0.037
N/D
10/87
0.016
0.011
0.007
UNNAMED BRANCH
LEGEND
○ Existing Monitor Well
⊖ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
BW-6
IW-1
N/D
N/D
M85L 11 (downgradient 400 ft.) - Trichloroethene 0.170
BW-13 (downgradient 1000 ft.) - N/D
200
0
200
SCALE IN FEET

FIGURE NO. 13 LOCATIONS AND CONCENTRATIONS OF VOLATILE CONTAMINANTS ASSOCIATED WITH DISPOSAL AREA 23 FOUND IN THE GROUNDWATER IN THE FRONT VALLEY

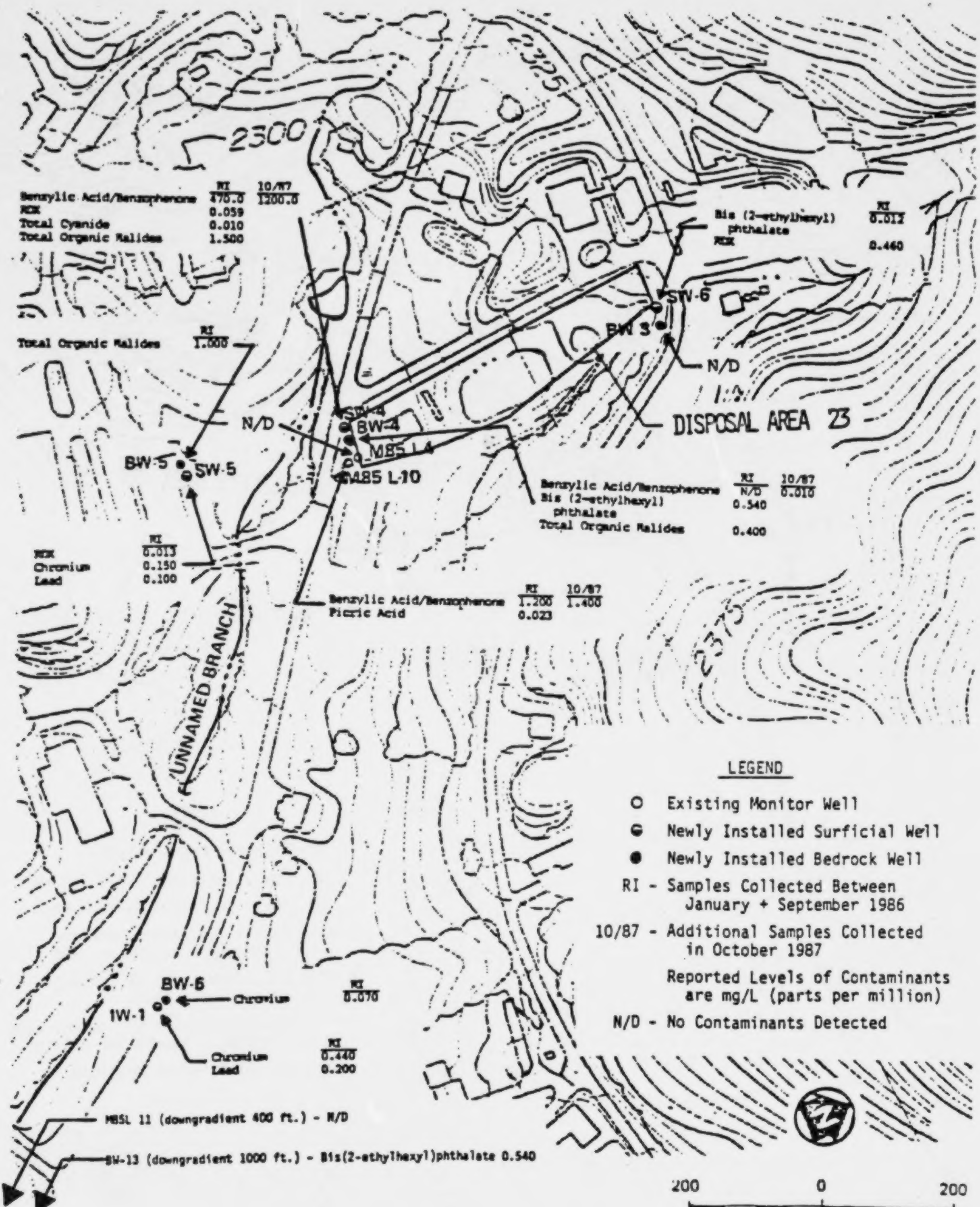
2300
2325
2375
Benzylic Acid/Benzophenone RI 470.0 10/87 1200.0
RDX 0.059
Total Cyanide 0.010
Total Organic Halides 1.500
Bis (2-ethylhexyl) phthalate RI 0.012
RDX 0.460
SW-6
BW 3
N/D
DISPOSAL AREA 23
Total Organic Halides RI 1.000
N/D
SW-4
BW-4
M85 L4
BW-5
SW-5
M85 L-10
Benzylic Acid/Benzophenone RI N/D 10/87 0.010
Bis (2-ethylhexyl) phthalate 0.540
Total Organic Halides 0.400
RDX RI 0.013
Chromium 0.150
Lead 0.100
Benzylic Acid/Benzophenone RI 1.200 10/87 1.400
Picric Acid 0.023
UNNAMED BRANCH
LEGEND
○ Existing Monitor Well
◒ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
BW-6
1W-1
Chromium RI 0.070
Chromium RI 0.440
Lead 0.200
MBSL 11 (downgradient 400 ft.) - N/D
BW-13 (downgradient 1000 ft.) - Bis(2-ethylhexyl)phthalate 0.540
200
0
200
SCALE IN FEET

FIGURE NO. 14 LOCATIONS AND CONCENTRATIONS OF NON-VOLATILE CONTAMINANTS ASSOCIATED WITH DISPOSAL AREA 23 FOUND IN THE GROUNDWATER IN THE FRONT VALLEY

Well	Type	Volatiles					Extractable	Explosives		Metals			CS/BZ Products		
		1,2-dichloroethane	Trichloroethylene	Methylene chloride	Chloroform	Benzene	Bis (2-ethylexyl) phthalate(2)	RDX	Picric acid	Chromium	Total organic halide	Total cyanide	Benzylic acid/benzophenone	Pesticides/PCBs	pH
Upgradient															
SW 6	Shallow	-	-	-	<0.01	-	0.012	0.046	-	+	*	-	NA	*	6.12
BW 3	Bedrock	-	-	-	-	-	<0.01	-	-	-	*	-	NA	-	6.30
Downgradient															
SW 4	Shallow	2.1	-	-	0.11	-	<0.01	0.059	-	-	1.5	0.01	470	-	6.45
IW 1	Intermediate	-	-	-	-	-	-	-	-	0.54	<0.01	-	NA	-	6.01
BW 4	Bedrock	0.53	<0.01	-	0.03	-	0.054	-	-	+	0.400	-	-	-	6.60
BW 5	Bedrock	0.15	-	-	-	-	<0.01	-	-	+	1.0	-	-	-	8.04
BW 6	Bedrock	<0.01	<0.01	-	<0.01	-	<0.01	-	-	0.07	*	-	NA	-	6.53
BW 13	Bedrock	-	-	-	<0.01	<0.01	<0.040	-	-	-	-	-	-	-	7.45
M85L4	Existing	0.15	<0.01	-	<0.01	-	-	-	-	-	*	-	NA	*	6.42
M85L10	Existing	7.4	<0.2	<0.2	-	<0.2	-	-	0.023	-	*	-	1.2	*	6.76
M85L11	Existing	-	0.170	-	-	-	-	-	-	-	*	-	NA	-	6.41

- = not detected
* = qualified data
NA = not analyzed

(1) Number of wells in this Area: 11
(2) Phthalate concentrations are assumed to be the result of contact between groundwater and phthalate-containing materials during well installations or handling and analysis in the laboratory.
(3) Contaminant Levels Measured in mg/L (parts per million)

TABLE NO. 8 CONTAMINANTS FOUND IN THE GROUNDWATER IN THE VICINITY OF DISPOSAL AREA 23

could be DA-23 in that this well is hydraulically downgradient from this disposal area. An essentially horizontal fracture in the bedrock was detected in MW BW-4 that could provide a pathway for this compound. This would explain the appearance of this contaminant in of MW BW-5 but not in MW SW-5, which was completed in the surficial zone.

Three contaminants were detected in MW BW-4: 1,2-dichloroethane, bis (2-ethylhexyl) phthalate, and chloroform (Figures 11 and 12). While the low concentration of bis (2-ethylhexyl) phthalate is likely the result of sample contamination, the presence of 1,2-dichloroethane and chloroform can be directly related to waste disposal in DA-23.

In summary, the only area of the bedrock zone affected by disposal activities in the Front Valley appears to be primarily in the vicinity of wells BW-4 and BW-5. This leads to the conclusion that the contamination of the bedrock zone of the aquifer in this valley is of limited extent and has migrated less than 800 feet from areas of waste disposal as evident by the absence of contaminants in wells BW-6 and intermediate monitor well #1 (IW-1) as can be seen in Figures 11 and 12.

3.5.2 GROUNDWATER CONTAMINATION IN GREGG VALLEY

Groundwater in the central portion of Gregg Valley is primarily contaminated by two volatile organic priority pollutants: 1,2-dichloroethane and trichloroethene (Figures 15, 17 and 19) and (Tables 7-12). These compounds most likely originated from the acid pits disposal area, DA-7/8 and DA-9. In general, concentrations of these compounds are highest near the disposal areas. Concentrations of trichloroethene and 1,2-dichloroethane in monitor wells located approximately 100 to 200 feet downgradient of the acid pit area (Figure 19) range from 0.04 to 9.2 mg/L and 0.014 to 9.2 mg/L, respectively. Concentrations of trichloroethene and 1,2-dichloroethane in MW X-3, approximately 300 feet downgradient of the acid pits, are 0.059 and 0.023 mg/L, respectively. The presence of these two compounds in the groundwater most likely extends further down the center of the valley but not as far as wells BW-11 and IW-3, approximately 600 to 900 feet downgradient as neither contaminant was detected in either of these wells.

The remainder of contaminants detected in the surficial zone of Gregg Valley occur less frequently and generally in lower concentrations than trichloroethene and 1,2-dichloroethane. These contaminants include other volatile organic priority pollutant compounds, extractable organic compounds explosives, metals, cyanide, and BZ degradation products (Tables 7-12). The distribution of these contaminants in the groundwater does not appear to be widespread or to extend further than 300 feet from the disposal areas according to analytical data from the downgradient monitor wells (Figures 16, 18 and 20).

In summary, two volatile organic priority pollutants (1,2-dichloroethane and trichloroethene) are present in the surficial zone of Gregg Valley. While these contaminants are generally more prevalent in the upper reaches of the surficial zone, they were also found in the lower reaches of the surficial zone (wells M85L-5 and IW-2) as can be seen in Figure 19. This indicates that contaminants within the surficial zone are migrating downward as well as laterally and will enter the bedrock zone. The downgradient lateral extent of this contamination has not yet reached the confluence of the eastern and western tributaries of Gregg Branch. The limit of contaminant migration to date appears to be within the area between wells X-3 and BW-11. Contamination by chemicals other than 1,2-dichloroethane and trichloroethene, however, is generally limited to portions of the aquifer that are close to DA-7/8, DA-9 and the acid pit area.

Finally, no contamination of the groundwater was detected downgradient of DA-6 (Figures 15 and 16).

The bedrock zone in the vicinity of the acid pits and DA-9 contains some of the contaminants detected in the surficial zone. In particular, three out of seven bedrock wells showed one or more analytes (Figures 17 through 20).

Trichloroethene was the only contaminant detected in MW BW-8, which most likely originated from the acid pits disposal area or DA-9. The concentration of trichloroethene was relatively low, at 0.012 mg/L. In contrast, four different contaminants were detected in the bedrock zone approximately 200 feet southeast of the acid pits at MW BW-9, specifically: 0.94 mg/L of 1,2-dichloroethane, 0.26 mg/L of trichloroethene 0.19 mg/L of benzene, and 0.05 mg/L of methylene chloride. The presence of these analytes at this location indicates that chemicals disposed of in the acid pit disposal area have moved downward through the surficial zone and have entered the bedrock zone in the vicinity of well BW-9 through surface joints and fractures.

None of the analytes found in wells BW-8 or BW-9, or in the surficial monitor wells in Gregg Valley were detected in wells BW-11 or BW-12 (Figures 19 and 20, Table 12). This indicates that presently, contaminants from the acid pits, DA-7/8 or DA-9 have not migrated this far (approximately 600 feet to BW-12 and 900 feet to BW-11). A trace quantity (0.002 mg/l) of benzylic acid/benzophenone, a BZ hydrolysis product, was detected in MW BW-11 in the sample collected during the the RI but was absent in the sample taken in October 1987.

In summary, the bedrock zone of Gregg Valley is contaminated by volatile organic priority pollutant compounds The extent of this contamination is more pronounced southeast of the acid pit area, in the vicinity of MW BW-9, but these contaminants have not reached wells BW-11 or BW-12. Therefore, the downgradient lateral extent of this contamination should be within 600 feet of the disposal areas.

3.6 SURFACE WATER AND SEDIMENT CONTAMINATION

The Site, as stated previously, can be subdivided into two small valleys formed on an unnamed stream and the Gregg Branch (Figure 21). These two valleys are referred to as the Front Valley and the Gregg Valley. The sizes of the watersheds encompassed in each valley is 221 acres and 691 acres, respectively, and both drain into Bee Tree Creek. Between the two valleys is a ridge of 44 acres draining directly into Bee Tree Creek. An additional area on the

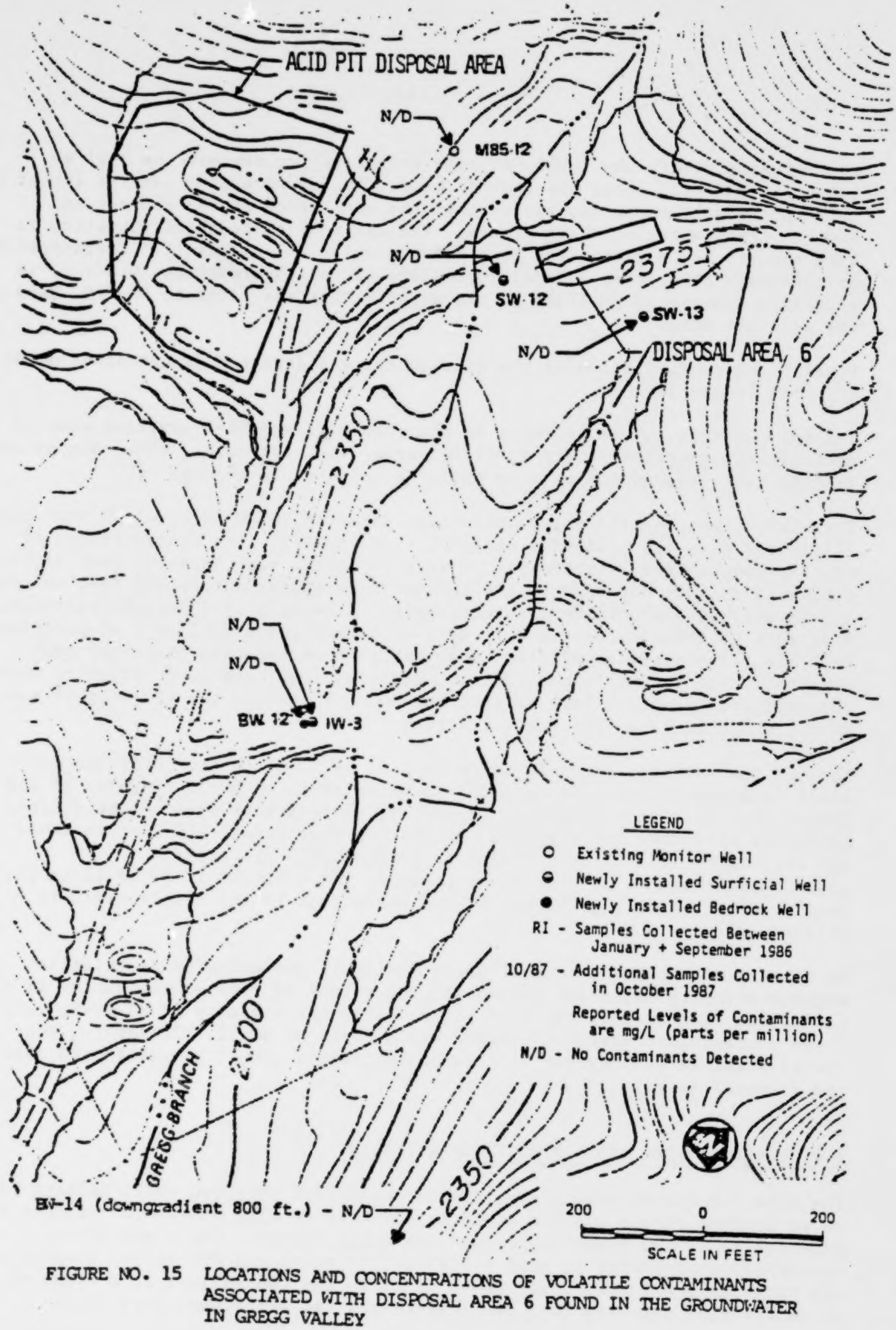
ACID PIT DISPOSAL AREA
N/D
MBS-12
N/D
SW-12
SW-13
N/D
DISPOSAL AREA 6
2375
2350
N/D
N/D
BW 12
IW-3
GREGG BRANCH
2300
2350
BW-14 (downgradient 800 ft.) - N/D
LEGEND
○ Existing Monitor Well
⊖ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
200
0
200
SCALE IN FEET

FIGURE NO. 15 LOCATIONS AND CONCENTRATIONS OF VOLATILE CONTAMINANTS ASSOCIATED WITH DISPOSAL AREA 6 FOUND IN THE GROUNDWATER IN GREGG VALLEY

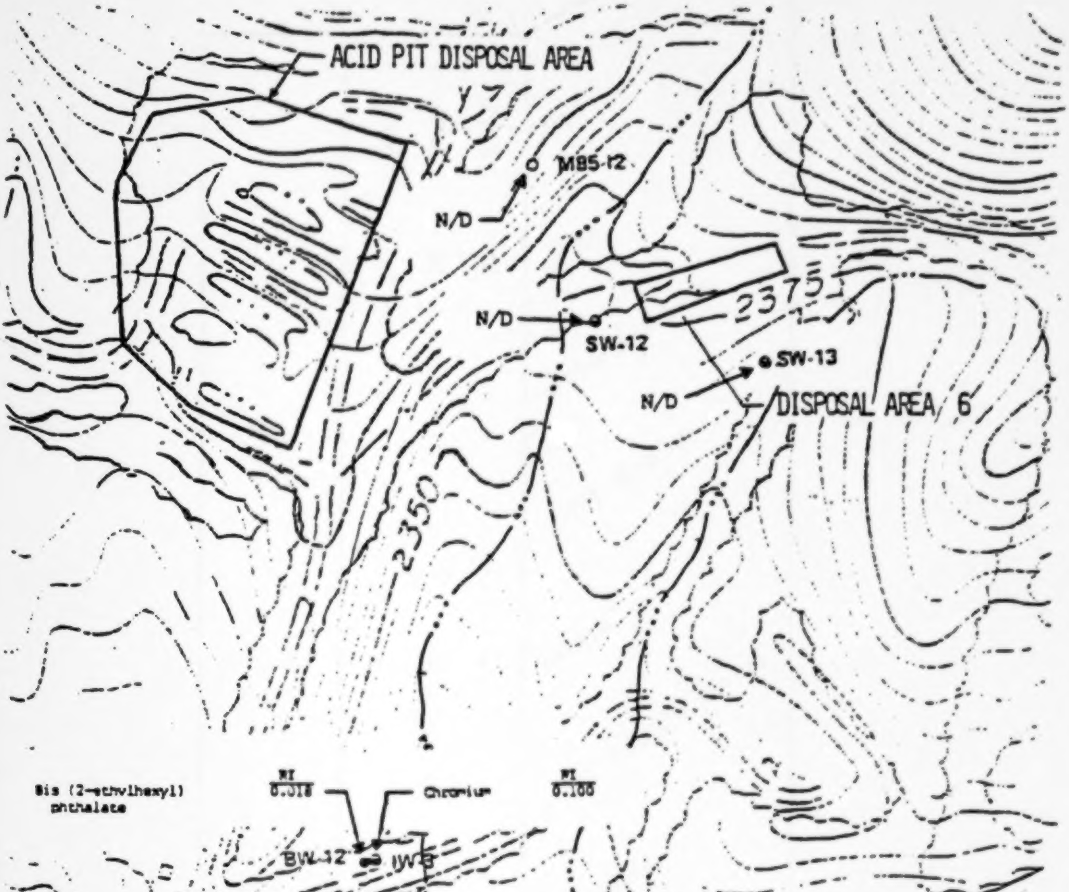
ACID PIT DISPOSAL AREA
MB5-12
N/D
N/D
SW-12
2375
SW-13
N/D
DISPOSAL AREA 6
2350
Bis (2-ethylhexyl) phthalate
RI
0.018
Chromium
RI
0.100
BW-12
IW-3
2300
GREGG BRANCH
BW-14 (downgradient 800 ft.)
Chromium 0.060
LEGEND
○ Existing Monitor Well
⊖ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
N
200
0
200
SCALE IN FEET

FIGURE NO. 16 LOCATIONS AND CONCENTRATIONS OF NON-VOLATILE CONTAMINANTS ASSOCIATED WITH DISPOSAL AREA 6 FOUND IN THE GROUNDWATER IN GREGG VALLEY

Well Location	Well Type	Volatiles	Extractables	Explosives	Total organic halide	Metals	Total cyanide	Pesticides/PCBs	CS/B2	pH
SW 12	Shallow	-	-	-	-	+	-	-	NA	6.83
SW 13	Shallow	-	-	-	-	+	-	-	NA	6.70
BW 14	Bedrock	-	-	-	-	+	-	-	-	8.48

- = not detected
+ = detected but not in significant levels
NA = not analyzed
(1) - Contaminants Levels Measured in mg/L (part per million)

TABLE NO. 9 CONTAMINANTS FOUND IN THE GROUNDWATER IN THE VICINITY OF DISPOSAL AREA 6

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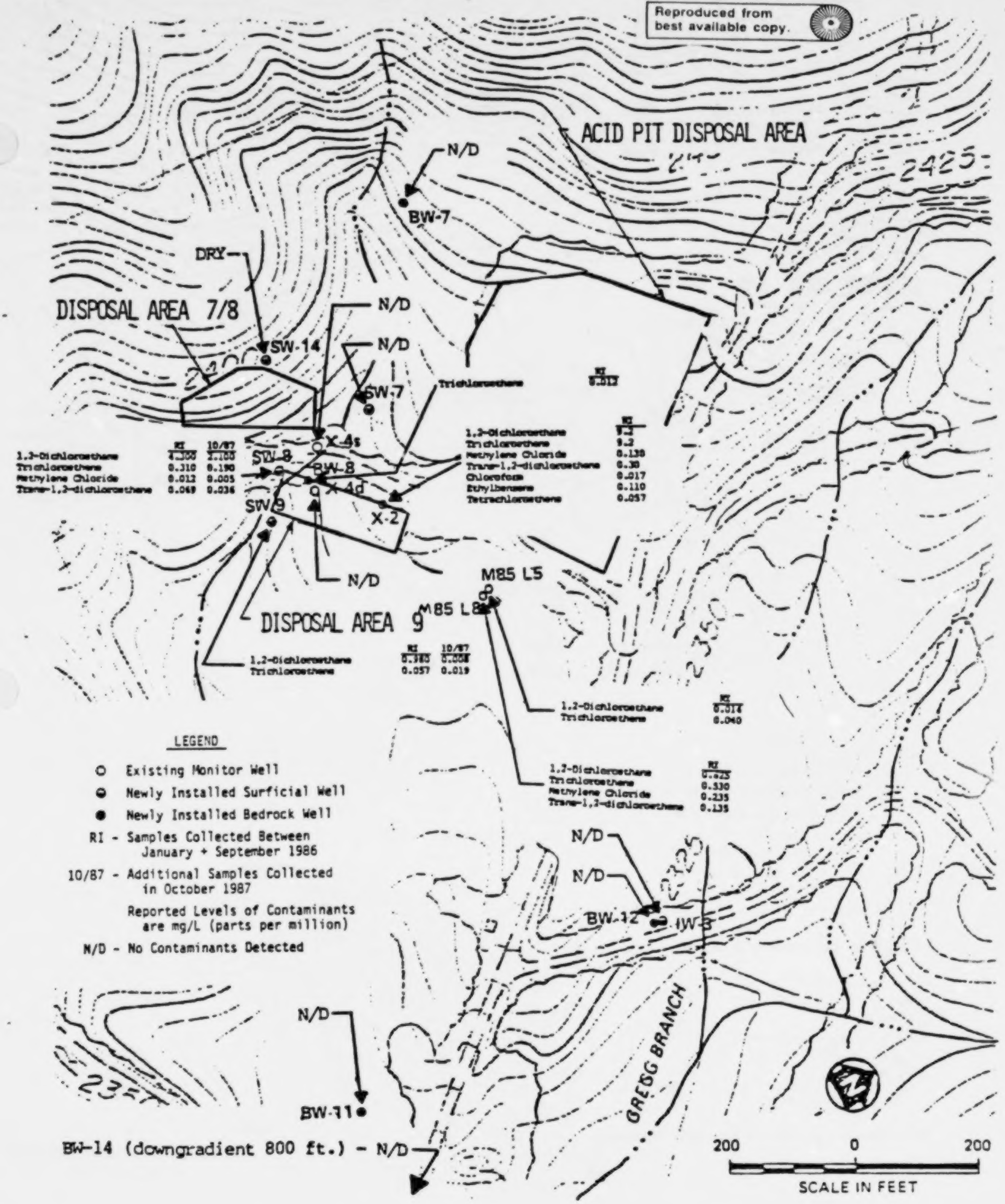

ACID PIT DISPOSAL AREA
2425
N/D
BW-7
DRY
DISPOSAL AREA 7/8
N/D
SW-14
N/D
2400
SW-7
Trichloroethene RI 0.012
1,2-Dichloroethene RI 9.2
Trichloroethene 9.2
Methylene Chloride 0.130
Trans-1,2-dichloroethene 0.30
Chloroform 0.017
Ethylbenzene 0.110
Tetrachloroethene 0.057
X-4s
1,2-Dichloroethene RI 4.300 10/87 2.100
Trichloroethene 0.310 0.190
Methylene Chloride 0.012 0.005
Trans-1,2-dichloroethene 0.069 0.036
SW-8
BW-8
X-4d
SW-9
X-2
N/D
M85 L5
M85 L8
DISPOSAL AREA 9
1,2-Dichloroethene RI 0.980 10/87 0.008
Trichloroethene 0.057 0.019
2350
1,2-Dichloroethene RI 0.014
Trichloroethene 0.040
LEGEND
○ Existing Monitor Well
◒ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
1,2-Dichloroethene RI 0.425
Trichloroethene 0.330
Methylene Chloride 0.235
Trans-1,2-dichloroethene 0.135
N/D
N/D
2325
BW-12
IW-3
GREGG BRANCH
N/D
BW-11
2350
BW-14 (downgradient 800 ft.) - N/D
N
200 0 200
SCALE IN FEET

FIGURE NO. 17 LOCATIONS AND CONCENTRATIONS OF VOLATILE CONTAMINANTS ASSOCAITED WITH DISPOSAL AREAS 7/8 AND 9 FOUND IN THE GROUNDWATER IN GREGG VALLEY

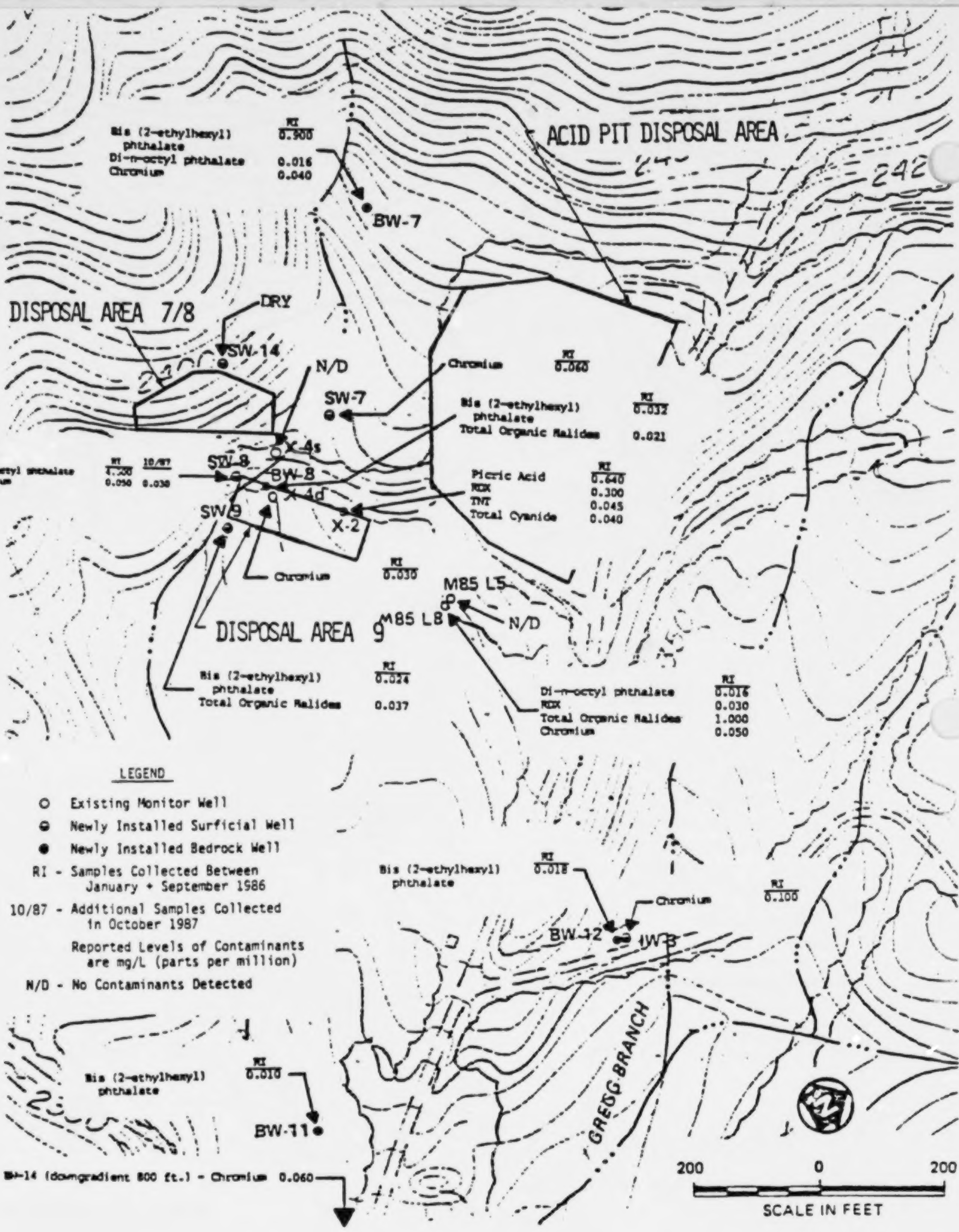

ACID PIT DISPOSAL AREA
242
Bis (2-ethylhexyl) phthalate RI 0.900
Di-n-octyl phthalate 0.016
Chromium 0.040
BW-7
DISPOSAL AREA 7/8
DRY
SW-14
N/D
SW-7
Chromium RI 0.060
Bis (2-ethylhexyl) phthalate RI 0.032
Total Organic Halides 0.021
X-4s
Di-n-octyl phthalate RI 1.200 10/87
Chromium 0.050 0.030
SW-8
BW-8
X-4d
Picric Acid RI 0.640
RDX 0.300
TNT 0.045
Total Cyanide 0.040
SW-9
X-2
Chromium RI 0.030
M85 L5
M85 L8
N/D
DISPOSAL AREA 9
Bis (2-ethylhexyl) phthalate RI 0.024
Total Organic Halides 0.037
Di-n-octyl phthalate RI 0.016
RDX 0.030
Total Organic Halides 1.000
Chromium 0.050
LEGEND
○ Existing Monitor Well
⊖ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
Bis (2-ethylhexyl) phthalate RI 0.018
Chromium RI 0.100
BW-12
IW-3
Bis (2-ethylhexyl) phthalate RI 0.010
BW-11
BW-14 (downgradient 800 ft.) - Chromium 0.060
GREGG BRANCH
200 0 200
SCALE IN FEET

FIGURE NO. 18 LOCATIONS AND CONCENTRATIONS OF NON-VOLATILE CONTAMINANTS ASSOCIATED WITH DISPOSAL AREA 7/8 AND 9 FOUND IN THE GROUNDWATER IN GREGG VALLEY

		Volatiles				**Extractables**		**Metals**							
Well Location	Well Type	1,2-dichloroethane	Methylene chloride	Trichloroethylene	Trans 1,2-dichloroethene	Bis (2-ethylhexyl) phthalate (1)	Total organic halide	Chromium	Nickel	Copper	Zinc	Total cyanide	Pesticides/PCBs	CS/B2	pH
1-4S	Existing	-	-	<0.01	-	-	-	+	+	+	+	-	-	NA	6.48
SW-8	Shallow	4.3	0.012	0.31	0.069	<0.01	-	0.05	0.06	0.09	0.05	-	-	-	6.43
BW-14	Bedrock	-	-	-	-	-	-	0.06	-	-	-	-	-	-	8.5

- : not detected
+ : detected but not in significant levels
NA : not analyzed

(1) Phthalatae concentrations are assumed to be the result of contact between groundwater and phthalate-containing materials during well installation or handling and analysis in the laboratory.

(2) Contaminant Levels Measured in mg/L (parts per million)

TABLE NO. 10 CONTAMINANTS FOUND IN THE GROUNDWATER IN THE VICINITY OF DISPOSAL AREA 7/8

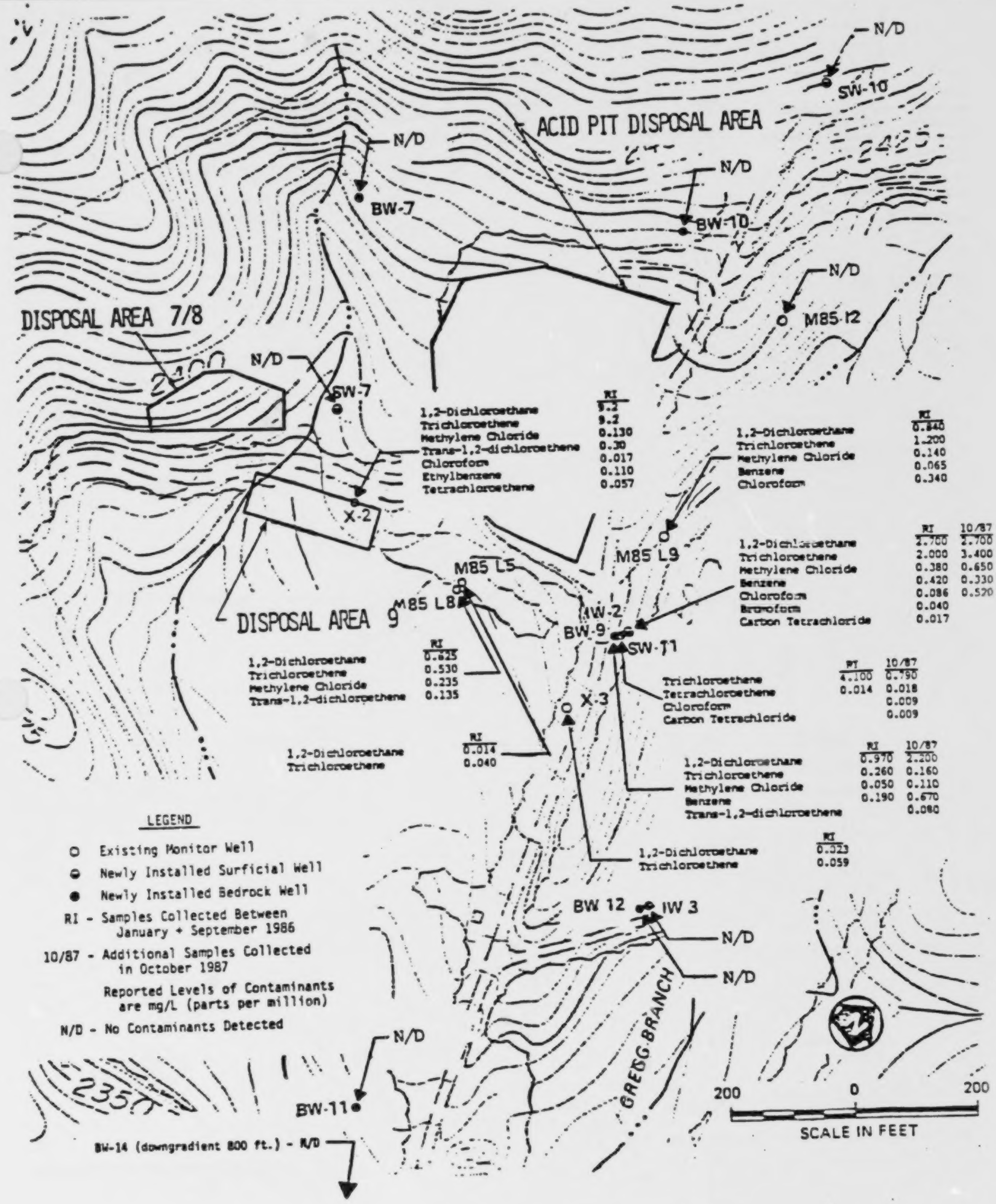
		Volatiles		Extractables							
Well Location	Well Type	Trichloroethylene	1,2-dichloroethane	Bis (2-ethylhexyl) phthalate(1)	Explosives	Total organic halide	Metals	Total cyanide	Pesticides/PCBs	CS/Bz	pH
X-4D	Existing	<0.01	<0.01	-	-	■	+	-	-	NA	6.25
SW 9	Shallow	0.57	0.98	0.024	-	0.037	+	-	-	NA	5.94
BW 8	Bedrock	0.012	<0.01	0.032	-	0.21	+	-	-	-	5.7(2)
BW 14	Bedrock	-	-	-	-	-	+	-	-	-	8.48

- = not detected
+ = detected but not in significant levels
■ = qualified data
NA = not analyzed

(1) Phthalate concentrations are assumed to be the result of contact between groundwater and phthalate-containing materials during well installations or handling and analysis in the laboratory

(2) Reported pH is a field measurement
(3) Contaminant Levels Measured in mg/L (parts per million)

TABLE NO. 11 CONTAMINANTS FOUND IN THE GROUNDWATER IN THE VICINITY OF DISPOSAL AREA 9


N/D
SW-10
ACID PIT DISPOSAL AREA
2425
N/D
BW-7
N/D
BW-10
N/D
M85-12
DISPOSAL AREA 7/8
2400
N/D
SW-7
X-2
M85 L5
M85 L9
M85 L8
DISPOSAL AREA 9
IW-2
BW-9
SW-11
X-3
BW 12
IW 3
N/D
N/D
GREGG BRANCH
N/D
BW-11
2350
200
0
200
SCALE IN FEET
LEGEND
○ Existing Monitor Well
⊖ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
BW-14 (downgradient 800 ft.) - N/D

	RI
1,2-Dichloroethane	9.2
Trichloroethene	9.2
Methylene Chloride	0.130
Trans-1,2-dichloroethene	0.30
Chloroform	0.017
Ethylbenzene	0.110
Tetrachloroethene	0.057

	RI
1,2-Dichloroethane	0.840
Trichloroethene	1.200
Methylene Chloride	0.140
Benzene	0.065
Chloroform	0.340

	RI	10/87
1,2-Dichloroethane	2.700	2.700
Trichloroethene	2.000	3.400
Methylene Chloride	0.380	0.650
Benzene	0.420	0.330
Chloroform	0.086	0.570
Bromoform	0.040	
Carbon Tetrachloride	0.017	

	RI
1,2-Dichloroethane	0.625
Trichloroethene	0.530
Methylene Chloride	0.235
Trans-1,2-dichloroethene	0.135

	RI	10/87
Trichloroethene	4.100	0.790
Tetrachloroethene	0.014	0.018
Chloroform		0.009
Carbon Tetrachloride		0.009

	RI
1,2-Dichloroethane	0.014
Trichloroethene	0.040

	RI	10/87
1,2-Dichloroethane	0.970	2.200
Trichloroethene	0.260	0.160
Methylene Chloride	0.050	0.110
Benzene	0.190	0.670
Trans-1,2-dichloroethene		0.080

	RI
1,2-Dichloroethane	0.023
Trichloroethene	0.059

FIGURE NO. 19 LOCATIONS AND CONCENTRATIONS OF VOLATILE CONTAMINANTS ASSOCIATED WITH ACID PIT DISPOSAL AREA FOUND IN THE GROUNDWATER IN GREGG VALLEY

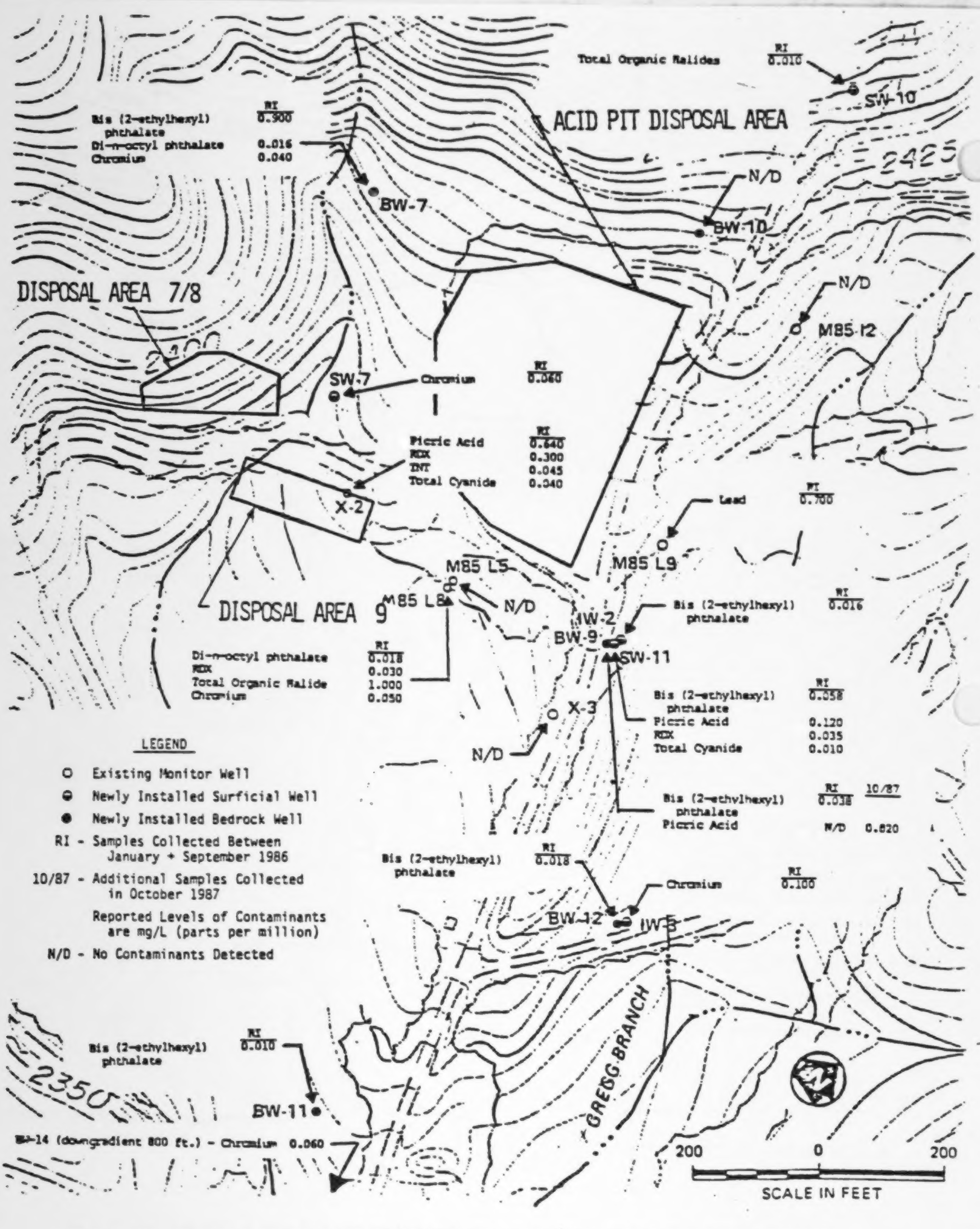

Total Organic Halides RI 0.010
SW-10
ACID PIT DISPOSAL AREA
2425
Bis (2-ethylhexyl) phthalate RI 0.900
Di-n-octyl phthalate 0.016
Chromium 0.040
BW-7
N/D
BW-10
N/D
M85 L2
DISPOSAL AREA 7/8
2400
SW-7
Chromium RI 0.060
Picric Acid RI 0.640
RDX 0.300
TNT 0.045
Total Cyanide 0.040
X-2
Lead RI 0.700
M85 L9
M85 L5
M85 L8
N/D
DISPOSAL AREA 9
IW-2
BW-9
SW-11
Bis (2-ethylhexyl) phthalate RI 0.016
Di-n-octyl phthalate RI 0.018
RDX 0.030
Total Organic Halide 1.000
Chromium 0.050
X-3
N/D
Bis (2-ethylhexyl) phthalate RI 0.058
Picric Acid 0.120
RDX 0.035
Total Cyanide 0.010
Bis (2-ethylhexyl) phthalate RI 0.038 10/87
Picric Acid N/D 0.820
LEGEND
○ Existing Monitor Well
⊖ Newly Installed Surficial Well
● Newly Installed Bedrock Well
RI - Samples Collected Between January + September 1986
10/87 - Additional Samples Collected in October 1987
Reported Levels of Contaminants are mg/L (parts per million)
N/D - No Contaminants Detected
Bis (2-ethylhexyl) phthalate RI 0.018
Chromium RI 0.100
BW-12
IW-3
GREGG BRANCH
Bis (2-ethylhexyl) phthalate RI 0.010
2350
BW-11
BW-14 (downgradient 800 ft.) - Chromium 0.060
200 0 200
SCALE IN FEET

FIGURE NO. 20 LOCATIONS AND CONCENTRATIONS OF NON-VOLATILE CONTAMINANTS ASSOCIATED WITH ACID PIT DISPOSAL AREA FOUND IN THE GROUNDWATER IN GREGG VALLEY

Well Location	Well Type	1,2-dichloroethane	Trichloroethylene	Methylene chloride	Trans 1,2-dichloroethane	Benzene	Chloroform	Ethylbenzene	Tetrachloroethane	Bromoform	Carbon tetrachloride	1,3 Dichlorobenzene
Upgradient												
BW 7		-	-	-	-	-	<0.01	-	-	-	-	-
BW 10		-	-	-	-	-	<0.01	-	-	-	-	-
BW 10		-	-	-	-	-	-	-	-	-	-	-
Downgradient												
M85L5	Existing	0.014	0.040	-	-	-	-	-	-	-	-	-
M85L8	Existing	0.625	0.530	0.235	<0.135	<0.05	-	<0.05	-	-	-	-
M85L9	Existing	0.040	1.2	0.140	-	0.065	0.340	-	-	-	-	-
M85I2	Existing	-	-	-	-	-	-	-	-	-	-	-
SW 7	Shallow	-	-	-	-	-	-	-	-	-	-	-
SW 11	Shallow	<0.01	4.1	<0.01	-	-	<0.01	-	0.014	-	<0.01	-
X2	Existing	9.2	9.3	0.130	0.300	<0.01	0.017	0.110	0.057	-	<0.01	<0.01
X3	Existing	0.023	0.059	<0.01	-	-	-	-	-	-	-	-
IW 2	Intermediate	2.7	2.0	0.38	<0.01	0.42	0.086	-	-	0.040	0.017	-
IW 3	Intermediate	-	-	-	-	-	-	-	-	-	-	-
BW 9	Bedrock	0.97	0.26	0.050	-	0.19	<0.05	-	-	-	-	-
BW 11	Bedrock	-	-	-	-	-	-	-	-	-	-	-
BW 12	Bedrock	-	-	-	-	-	-	-	-	-	-	-
BW 14	Bedrock	-	-	-	-	-	-	-	-	-	-	-

TABLE NO. 12 CONTAMINANTS FOUND IN THE GROUNDWATER IN THE VICINITY OF THE ACID PIT DISPOSAL AREA

Well Location	Well Type	Extractables			Explosives					Metals				
		Di-n-octyl phthalate (1)	N-nitrosodimethylamine	Bis (2-ethylhexyl) phthalate (1)	Picric acid	HMX	TNT	Total cyanide	Total organic halide	Lead	Chromium	Pesticides/PCBs	CS/82	pH
Upgradient														
IW 7	Bedrock	0.016	-	0.90	-	-	-	-	-	0.04	-	-	NA	9.13
BW 10	Bedrock	-	-	<0.01	-	-	-	-	-	-	-	-	NA	6.75
SW 10	Shallow	-	-	<0.01	-	-	-	-	0.01	-	-	-	NA	6.60
Downgradient														
H85L5	Existing	-	-	<0.01	-	-	-	-	-	-	-	*	NA	6.31
HA5L8	Existing	-	0.018	-	-	0.030	-	-	1.0	-	0.05	-	NA	6.88
H85L9	Existing	-	-	-	-	-	-	-	-	0.7	-	-	NA	4.77
HA512	Existing	-	-	-	-	-	-	-	-	-	-	-	NA	6.32
SW 7	Shallow	-	-	<0.01	-	-	-	-	-	-	0.06	-	NA	6.06
SW 11	Shallow	-	-	0.016	-	-	-	-	*	-	-	-	NA	5.64
X2	Existing	-	-	-	0.640	0.300	0.045	0.04	*	-	-	-	NA	6.73
X3	Existing	-	-	-	-	-	-	-	-	-	0.03	-	NA	4.92
IW 2	Intermediate	-	-	0.058	0.120	0.035	-	0.01	-	-	-	-	NA	6.42
IW 3	Intermediate	-	-	-	-	-	-	-	-	-	0.10	-	NA	6.08
BW 9	Bedrock	-	-	0.038	-	-	-	-	-	-	-	-	NA	6.53
BW 11	Bedrock	-	-	0.010	-	-	-	-	-	-	-	-	<0.01	6.23
BW 12	Bedrock	-	-	0.018	-	-	-	-	*	-	-	-	NA	8.16
BW 14	Existing	-	-	-	-	-	-	-	-	-	0.06	-	NA	8.18

- : not detected NA : not analyzed * : qualified data

(1) Phthalate concentrations are assumed to be the result of contact between groundwater and phthalate-containing materials during well installations or handling and analysis in the laboratory

(2) Contaminant Levels Measured in mg/L (parts per million)

TABLE NO. 12 CONTAMINANTS FOUND IN THE GROUNDWATER IN THE VICINITY OF THE ACID PIT DISPOSAL AREA property east of Gregg Branch also drains directly into Bee Tree Creek. These last two areas contain no known disposal areas. It is evident from surface topography that surface runoff from on-site disposal areas discharge directly to the unnamed or Gregg Branch only and not directly to Bee Tree Creek.

Surface water and sediment samples were collected from the unnamed creek draining the Front Valley, Gregg Branch draining Gregg Valley, Bee Tree Creek, and their tributaries (Figures 22 and 23). All sampling was conducted when storm runoff was negligible so that the streamflow in these streams consisted of baseflow only. Therefore, surface water contamination is indicative of contaminated groundwater at or above the sampling point.

Analysis of surface water and sediment samples indicate contaminated baseflow is entering the streams on-site. In all cases, concentrations decrease to levels below detection limits downstream of the suspected sources. The major factors contributing to the reduced levels of contamination downstream are volatilization and/or dilution.

Analysis of sediment samples indicate erosional transport mechanisms at work transporting contaminants away from the disposal areas. The concentrations of the contaminants associated with the sediment also decrease downstream.

In general, metals were detected in sediments from the two on-site branches but not in sediments from Bee Tree Creek. This is most likely due to the different depositional characteristics of the sampling sites which affect the chemical characteristics of the sediment from those on-site.

3.6.1 SURFACE WATER AND SEDIMENT CONTAMINATION IN THE FRONT VALLEY

Figure 22 provides the locations of the sampling points where surface water and sediment samples were collected as well as a compilation of the data associated with this sampling episode.

In summary, surface water data indicates the presence of groundwater sources of volatile organics at DA-23 and near Building 104. Sediment analytical data indicates surface erosion sources at DA-23, above RW-8 and above RW-12. The surface water data also indicates that the groundwater is also contaminated by explosives. These sources are probably either DA-23 or the leach field associated with Process Building 115.

No explosives were detected in any if the sediment samples indicating that surface runoff and erosion have not contributed explosives contaminants to the surface water.

3.6.2 SURFACE WATER AND SEDIMENT CONTAMINATION IN GREGG VALLEY

Figure 23 provides the location of the sampling points where surface water and sediment samples from Gregg Valley were collected. Also presented in Figure 25 are the contaminants found along with their concentrations.

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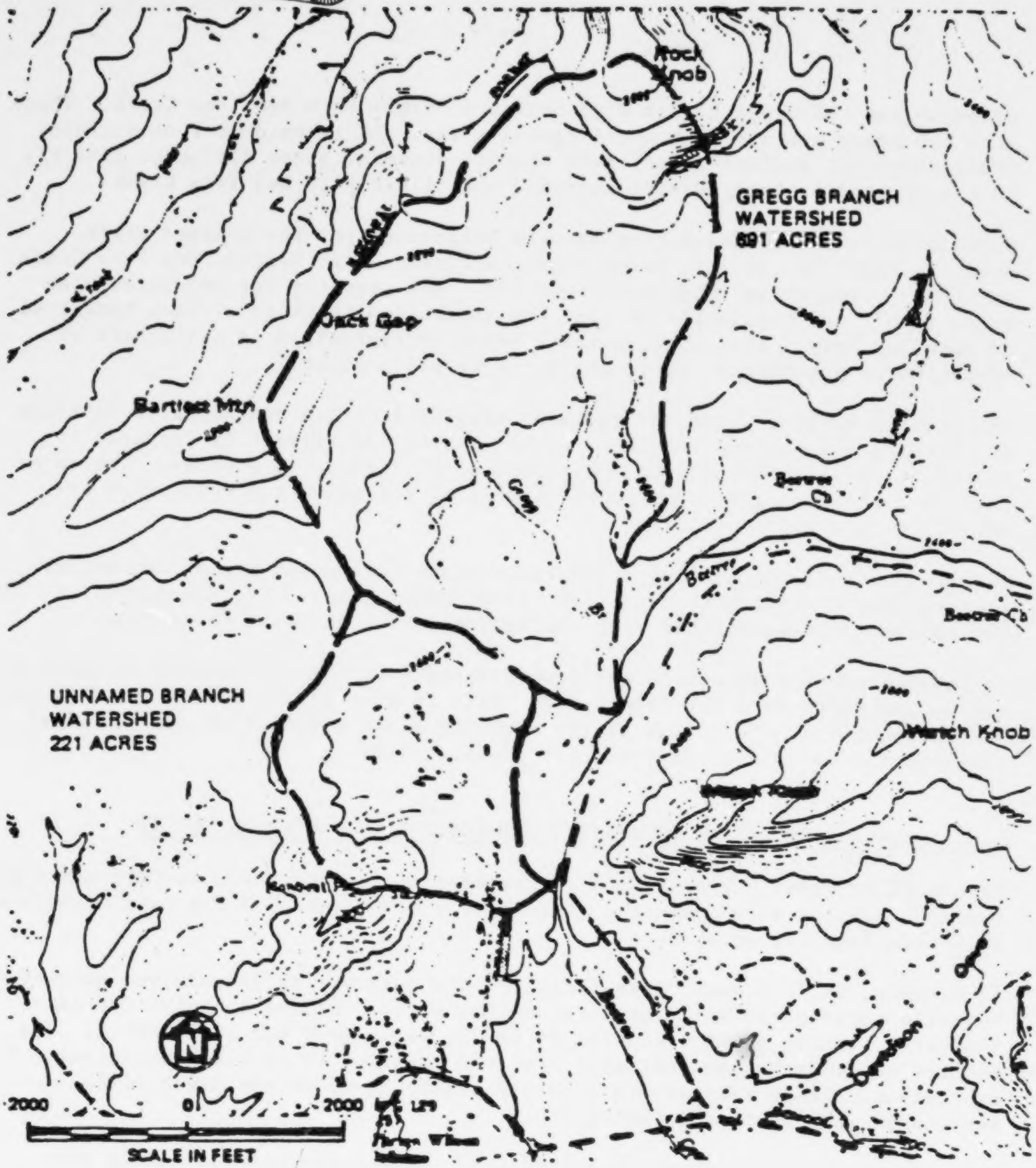
Rock Knob
GREGG BRANCH
WATERSHED
691 ACRES
Jack Gap
Bartlett Mtn
Gregg
Br.
Beetree Cr
Beetree Cr
UNNAMED BRANCH
WATERSHED
221 ACRES
Watch Knob
N
2000
0
2000
SCALE IN FEET

FIGURE NO. 21 DRAINAGE AREAS FOR THE UNNAMED BRANCH AND GREGG BRANCH

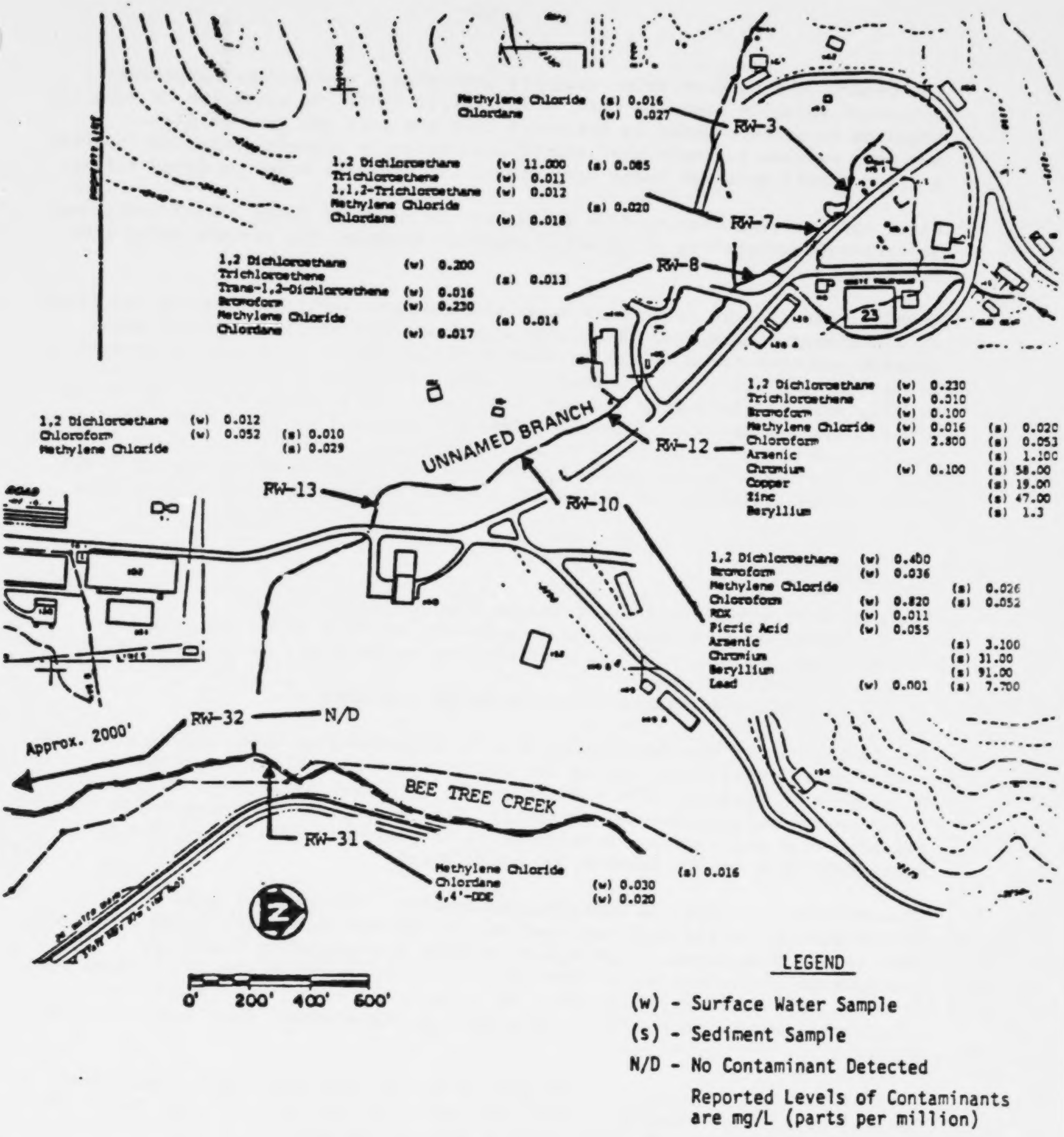
Methylene Chloride (s) 0.016
Chlordane (w) 0.027
RW-3
1,2 Dichloroethane (w) 11.000 (s) 0.085
Trichloroethene (w) 0.011
1,1,2-Trichloroethane (w) 0.012
Methylene Chloride (s) 0.020
Chlordane (w) 0.018
RW-7
1,2 Dichloroethane (w) 0.200
Trichloroethene (s) 0.013
Trans-1,2-Dichloroethene (w) 0.016
Bromoform (w) 0.230
Methylene Chloride (s) 0.014
Chlordane (w) 0.017
RW-8
23
1,2 Dichloroethane (w) 0.230
Trichloroethene (w) 0.310
Bromoform (w) 0.100
Methylene Chloride (w) 0.016 (s) 0.020
Chloroform (w) 2.800 (s) 0.053
Arsenic (s) 1.100
Chromium (w) 0.100 (s) 58.00
Copper (s) 19.00
Zinc (s) 47.00
Beryllium (s) 1.3
RW-12
UNNAMED BRANCH
1,2 Dichloroethane (w) 0.012
Chloroform (w) 0.052 (s) 0.010
Methylene Chloride (s) 0.029
RW-13
RW-10
1,2 Dichloroethane (w) 0.400
Bromoform (w) 0.036
Methylene Chloride (s) 0.026
Chloroform (w) 0.820 (s) 0.052
RDX (w) 0.011
Picric Acid (w) 0.055
Arsenic (s) 3.100
Chromium (s) 31.00
Beryllium (s) 91.00
Lead (w) 0.001 (s) 7.700
RW-32 N/D
Approx. 2000'
BEE TREE CREEK
RW-31
Methylene Chloride (s) 0.016
Chlordane (w) 0.030
4,4'-DDE (w) 0.020
N
0' 200' 400' 600'
LEGEND
(w) - Surface Water Sample
(s) - Sediment Sample
N/D - No Contaminant Detected
Reported Levels of Contaminants are mg/L (parts per million)

FIGURE NO. 22 LOCATIONS AND CONCENTRATIONS OF CONTAMINANTS FOUND IN THE SURFACE WATER AND SEDIMENT IN THE UNNAMED BRANCH AND BEE TREE CREEK

In summary, the surface water analysis indicates a contaminated groundwater source of volatile organics from DA-7/8 and/or DA-9. No migration of volatile organics to surface water is indicated from the acid pit area or DA-6. Sediment samples indicate that significant volatile organic contamination from surface runoff does not occur from any of the disposal areas in Gregg Valley.

Water and sediment samples from RW-28, at the mouth of Gregg Branch indicates no detectable migration of volatile organics off-site via surface water into Bee Tree Creek.

Cyanide was detected in surface water and sediment samples. Cyanide was found in a sediment sample from RW-21, downstream of DA-6 and the acid pit area. Cyanide was also found in the groundwater in MW IW-2. This well is located downgradient of DA-6 and the acid pit area. Cyanide was also found in soil samples from the following borings: AP-3, AP-4, AP-5, AP-9, AP-11, AP-15, and AP-19. Cyanide was also found in a test pit sample from DA-6. This indicates that sediment cyanide at RW-21 is most likely due to runoff or erosion from the DA-6 and/or the acid pit area. Cyanide was not found in water leaving Gregg Valley as indicated by the analytical results for sample RW-28 (Figure 23).

3.7 RECEPTORS

The routes of exposure examined in the Risk Assessment were:

1) ingestion of contaminated groundwater, surface water and wild life;
2) direct contact with the contaminants in the soil, surface waters or groundwater; and
3) inhalation of vapors or contaminated particles.

The aquifer under the Chemtronics Site is classified as Class IIB, a potential source of drinking water, using the USEPA Groundwater Classifications Guidelines of December 1986. Although the site aquifer is not currently used for drinking water purposes, potential (future) use was incorporated in the baseline risk assessment. Consideration of potential groundwater use is consistent with 40 CFR Section 300.68(e)(2)(v).

Groundwater, as noted, is contaminated on-site. The general flow of groundwater is to the east and west to the unnamed stream and Gregg Branch and east to Bee Tree Creek, discharging to these surface water features. Groundwater contamination was particularly noted downgradient of the Acid Pit Area and DA-23. No drinking water wells exist between the site and the groundwater discharge points, thus a pathway via domestic well usage does not exist.

Currently, fugitive dust particle generation is considered an unlikely event. The majority of the disposal areas are capped by dirt and are vegetated. One area, although vegetated, has numerous empty drums exposed at ground level. This area, DA-9, was identified in the RI to have the greatest degree of risk to exposure to the contaminants present. The chance of exposure is greatly reduced to the remoteness of this disposal area.

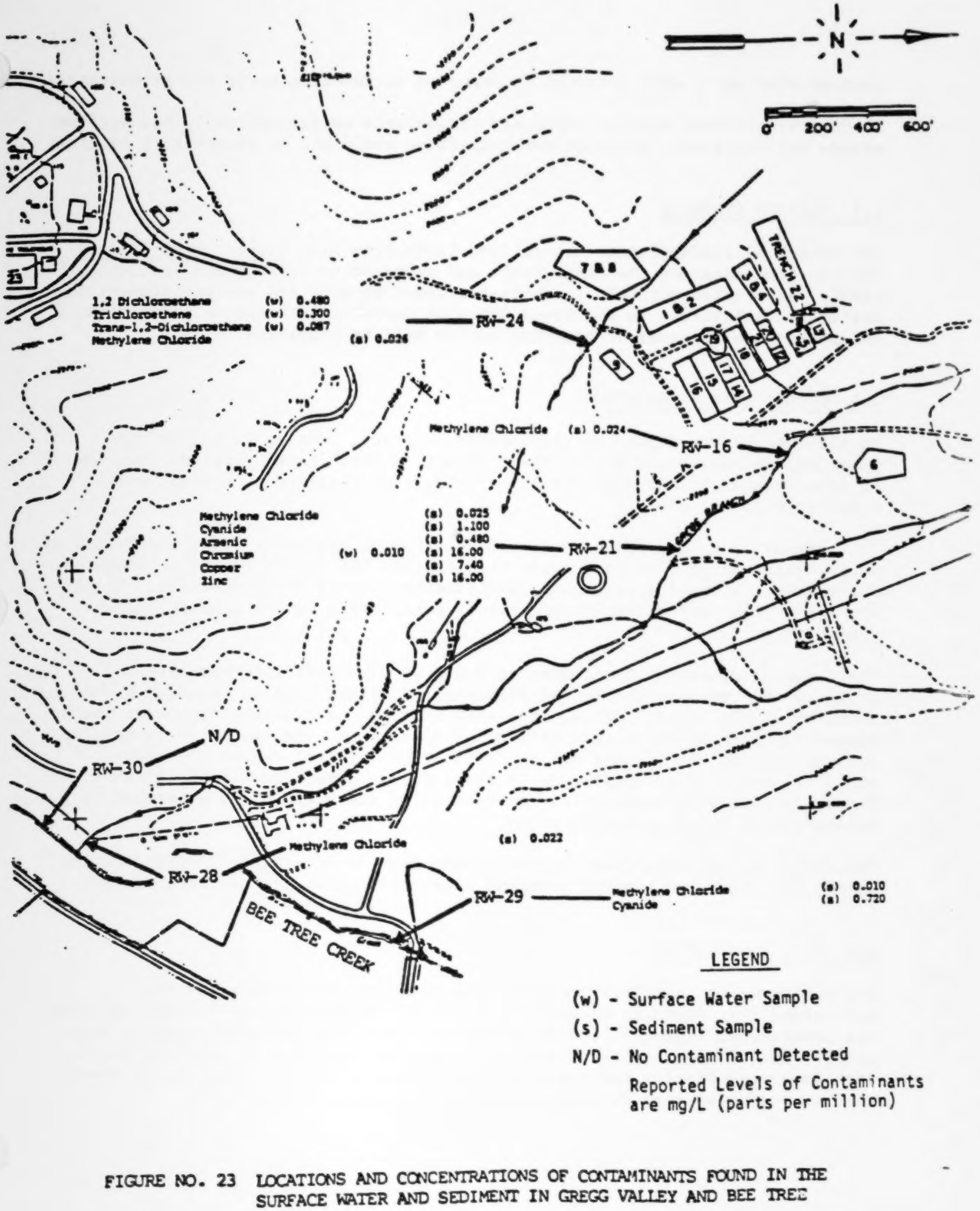
N
0' 200' 400' 600'
7 & 8
1 & 2
3 & 4
TRENCH 22
9
6
15
16
17
14
18
19
23
1,2 Dichloroethene (w) 0.480
Trichloroethene (w) 0.300
Trans-1,2-Dichloroethene (w) 0.087
Methylene Chloride (s) 0.026
RW-24
Methylene Chloride (s) 0.024
RW-16
Methylene Chloride (s) 0.025
Cyanide (s) 1.100
Arsenic (s) 0.480
Chromium (w) 0.010 (s) 16.00
Copper (s) 7.40
Zinc (s) 16.00
RW-21
N/D
RW-30
Methylene Chloride (s) 0.022
RW-28
RW-29
Methylene Chloride (s) 0.010
Cyanide (s) 0.720
BEE TREE CREEK
LEGEND
(w) - Surface Water Sample
(s) - Sediment Sample
N/D - No Contaminant Detected
Reported Levels of Contaminants are mg/L (parts per million)

FIGURE NO. 23 LOCATIONS AND CONCENTRATIONS OF CONTAMINANTS FOUND IN THE SURFACE WATER AND SEDIMENT IN GREGG VALLEY AND BEE TREE CREEK

Contaminated soils will continue to leach to surrounding soils and groundwater.

Surface runoff from surface soils may contaminate additional soils and surface waters and sediments, although concentrations would not be expected to be high.

4.0 CLEANUP CRITERIA

The extent of contamination was defined in Section 3.0, Current Site Status. This section examines the "applicable and relevant or appropriate regulations" (ARARs) associated with the contaminants found on site and the environmental medium contaminated. In the cases where no specific ARAR can be identified, a defendable minimum goal of remedial action will be presented.

4.1 GROUNDWATER REMEDIATION

In determining the degree of groundwater clean-up, Section 121(d) of the Superfund Amendment and Reauthorization Act of 1986 (SARA) requires that the selected remedial action(s) establish a level or standard of control which complies with all ARARs.

This remedy is a cost-effective remedy which will achieve a level protective of human health as will as remove the threats this Site poses to the environment. The remedy will meet appropriate requirements, and is cost-effective. Finally, the remedy utilizes permanent treatment technologies to the maximum extent practicable.

The presence of several contaminated found on Site presented some special problems with respect to the establishment of target cleanup levels. Since these chemicals either lack or have only limited human health standards and supporting physiochemical and toxicological data, it was necessary to develop preliminary pollutant limit values (PPLVs) for critical exposure pathways, using estimates of acceptable daily doses (D_T) and partition coefficients. The calculations and supporting references for these PPLVs are presented in Appendix A of the Feasibility Study.

For those contaminants found in the groundwater on-site Table 13 presents the levels the migration control remedial alternative will achieve at a minimum.

4.2 SOIL REMEDIATION

The Public Health and Environmental Assessment in the RI (Chapter 4), determined that risks to human as a result of exposure to on-site contaminants via inhalation, ingestion and dermal contact are very low under present Site conditions. For potential future use scenarios, the risk is slightly higher. Therefore, remediation and institutional controls will be necessary to assure that an increased risk to human health is not posed in the future.

TABLE NO. 13 GROUNDWATER REMEDIATION LEVELS AND CITED REFERENCES

Compound	Remediation Level mg/l	Source
1,2-Dichloroethane	0.005	MCL
Trichloroethylene	0.005	MCL
Methylene Chloride	0.06	RSD
Trans-1,2-Dichloroethylene	0.07	PMCLG
Benzene	0.005	MCL
Chloroform	0.1	MCL(TTHM)
Ethylbenzene	0.68	PMCLG
Tetrachloroethylene	0.007	RSD
Bromoform	0.1	MCL(TTHM)
Carbon Tetrachloride	0.005	MCL
Toluene	2.0	PMCLG
Picric Acid	14.0	PPLV
RDX	0.035	USAIWQC
TNT	0.044	PPLV
Total Cyanides	0.200	RfD
Lead	0.05	MCL
Chromium	0.05	MCL
Nickel	0.5	RfD
Copper	1	MCL
Zinc	5	WQC
Benzilic Acid	0.021	PPLV
Benzophenone	0.152	PPLV

MCL - Maximum Contaminant Level.

MCL(TTHM) - The MCL for Total Trihalomethanes (sum of all concentrations) is 0.1 mg/l. TTHM's include chloroform, bromoform, bromodichloromethane, and chlorodibromomethane.

PMCLG - Proposed Maximum Contaminant Level Goal 50 FR 46936-47022 (November 13, 1985).

PPLV - Preliminary Pollutant Limit Value (see Appendix A).

RfD - Reference Dose 52 FR 29992-29997 (August 12, 1987).

RSD - Risk Specific Dose, 51 FR 21648-21693.

USAIWQC - US Army Water Quality Criteria. The given values have been approved by the Army Surgeon General.

WQC - Clean Water Act, Water Quality Criteria for Human Health - Adjusted for Drinking Water Only, [Gold Book].

From TLV - Calculated from a Threshold Limit Value, based on a 70 kg person who drinks 2 liters of water per day. A safety factor of 100 has also been applied.

TABLE NO. 14 SOIL REMEDIATION LEVELS FOR CONTAMINANTS LACKING PROMULGATED CRITERIA OR STANDARDS

Contaminant Group	Soil Standard (mg/Kg)	Source
PCBs	10	TSCA
3-Quinuclidinol	25.7	PPLV
Benzilic Acid	9.3	PPLV
Benzophenone	9.3	PPLV
CS (2-Chlorobenzal-malononitrile)	43.3	PPLV
Malononitrile	N/A+	PPLV
O-Chlorobenzaldehyde	0.31	PPLV
TNT	305	PPLV
RDX	95	PPLV
Picrate/Picric Acid	38,000	PPLV

+ - Malononitrile would not persist in soil based upon K_d partition coefficient

Table 14 presents remediation levels the source control remedial alternative will achieve. This includes PPLVs for these contaminants lacking promulgated criteria or standards.

4.3 SURFACE WATER/SEDIMENT REMEDIATION

The contaminant levels in the surface waters (the unnamed stream and Gregg Branch) are expected to decline with the implementation of groundwater and soil remediation. Thus, it was concluded that the remediation of surface water is not necessary. A biomonitoring program will be implemented to document that the remediation activities do not have an adverse affect on the surface waters. The RI did not identify any contaminants entering Bee Tree Creek from the Site.

5.0 ALTERNATIVES EVALUATED

The purpose of the remedial action at the Chemtronics Site is to mitigate and minimize contamination in the soils and ground water, and to reduce potential risks to human health and the environment. The following clean-up objectives were determined based on regulatory requirements and levels of contamination found at the Site:

* To protect the public health and the environment from exposure to contaminated on-site soils through inhalation, direct contact, and erosion of soils into surface waters and wetlands;

* To prevent off-site movement of contaminated groundwater; and

* To restore contaminated groundwater to levels protective of human health and the environment.

An initial screening (Table 15) of applicable technologies identified to address both source and migration control was performed to retain those which best meet the criteria of Section 300.65 of the National Contingency Plan (NCP). Following the initial screening of technologies, potential remedial action alternatives for source control were identified and analyzed. These alternatives were further screened and those which best satisfied the clean-up objectives, while also being cost-effective and technically feasible, were developed further.

Table 16 identifies those source control alternatives that were retained following the initial screening of technologies. Table 17 associates the cost of each of these alternatives. The alternatives retained following the cost evaluation are presented in Table 18.

The same sequence of screening and evaluations procedures was conducted on the potential migration control remedial action alternatives that were retained following the evaluation of these technologies on technical merit (Table 15). Following the initial screening, the potential remedial action alternatives for migration control were identified and analyzed (Table 19). Costs for each of

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TABLE NO. 15 (continued) RESULTS OF TECHNICAL EVALUATION OF SOURCE CONTROL AND MIGRATION CONTROL TECHNOLOGIES

Technology	Status	Reason
No Action	Retained	
Secondary Water Supply	Rejected	No impacted receptors
Discharge to POTW	Retained	
Activated Carbon Adsorption	Retained	
Aerobic Biological Treatment	Rejected	Too low COD to support biological growth
Anaerobic Biological Treatment	Rejected	Potentially unstable operation, too low COD to support biological growth
PACT	Rejected	Too low COD to support biological growth
Fixed Film Systems	Retained	
Filtration	Retained	
Precipitation/Flocculation	Retained	
Sedimentation	Retained	
Ion Exchange/Sorptive Resins	Retained	
Reverse Osmosis	Rejected	Potential for growth on membrane and damage to membrane from iron and manganese
Neutralization	Retained	
Chemical Oxidation	Rejected	Technically inferior to ultraviolet/ozonation.
Chemical Reduction	Rejected	Little applicability in treating identified contaminants
Air stripping	Retained	
Steam Stripping	Rejected	No ready source of steam, unsuitable contaminants; cost
Steam Distillation	Rejected	Inability to separate several contaminants from water because of similar boiling points; cost
Liquid/Liquid Extraction	Rejected	Cannot remove compounds to remediation levels
Liquid/CO_2 Extraction	Rejected	Less than 40% recovery rate for many organics
Catalytic Dehydrochlorination	Rejected	Unproven technology on full-scale basis
Wet Air Oxidation	Rejected	Chlorinated species too stable for wet air oxidation; cost
Incineration	Rejected	BTU value of waste stream too low; cost
Hydrolysis	Rejected	Inappropriate technology
Ultraviolet/Ozonation	Retained	
Spray Irrigation	Rejected	Would not remove or degrade all compounds
Horizontal Irrigation	Rejected	Would not remove or degrade all compounds
Extraction Wells	Retained	
Subsurface Drains and Interception Trenches	Retained	

TABLE NO. 16 POTENTIAL SOURCE CONTROL REMEDIAL ACTION ALTERNATIVES (Prior to Cost Evaluation)

Alternative	Description
1A	No Action
1B	Fence DA 9; no action elsewhere
2A	Cap DA 9; no action elsewhere
2B	Off-site landfilling of top 2 feet in DA 9; no action elsewhere
3A	Cap DA 7/8, 9, 10/11, 14, and 23; no action in DA 6 and rest of Acid Pits
3B	Cap DA 6, 7/8, 9, 10/11, 14, and 23; no action in rest of Acid Pits
3C	Cap all on-site areas
4A	Soil vent DA 14 and DA 23; cap DA 6, 7/8, 9, and 10/11
4B	HWT fixation of soils in DA 14 and DA 23; cap DA 6, 7/8, 9, and 10/11
4C	Off-site landfilling of DA 14 and DA 23; cap 6, 7/8, 9, and 10/11
4D	On-site incineration of DA 14 and DA 23; cap DA 6, 7/8, 9, and 10/11
5A	HWT fixation of soils in Table 4.14; off-site incineration of buried drums
5B	Off-site landfilling of soils in Table 4.14; off-site incineration of buried drums
5C	On-site incineration of soils in Table 4.14 and buried drums

TABLE NO. 18 RETAINED SOURCE CONTROL REMEDIAL ACTION ALTERNATIVES

Alternative	Description
1A	No Action
1B	Fence DA 9; no action elsewhere
2A	Cap DA 9; no action elsewhere
2B	Off-site landfilling of top 2 feet in DA 9; no action elsewhere
3A	Cap DA 7/8, 9, 10/11, 14, and 23; no action in DA 6 and rest of Acid Pits
3B	Cap DA 6, 7/8, 9, 10/11, 14, and 23; no action in rest of Acid Pits
3C	Cap all on-site areas
4A	Soil vent DA 14 and DA 23; cap DA 6, 7/8, 9, and 10/11
4B	HWT fixation of soils in DA 14 and DA 23; cap DA 6, 7/8, 9, and 10/11
4D	On-site incineration of DA 14 and DA 23; cap DA 6, 7/8, 9, and 10/11
5C	On-site incineration of soils in Table 4.14 and buried drums

these retained alternatives are given in Table 20. These alternatives were further screened and those which best satisfied the clean-up objectives, while also being cost-effective and technically feasible, were retained. Table 21 identifies these migration control alternatives that were considered in finalizing the remedial action alternative selected for the Chemtronics Site.

Table 22 summarizes all the source control and migration control alternatives considered for determining the remedial action for the Chemtronics Site.

6.0 RECOMMENDED ALTERNATIVES

6.1 DESCRIPTION OF RECOMMENDED REMEDY

The recommended alternative for remediation of groundwater and soil contamination at the Chemtronics Site includes extraction, treatment and discharge of groundwater; capping and fixation/stabilization/solidification for contaminated soils. The capped areas will be fenced with a chain-linked fence and marked accordingly. The disposal area fixated/stabilized/solidified will also be capped.

The water and sediment in the pond on the unnamed stream will be sampled. If evidence of contamination is present, the pond will be drained with the water being sent through the treatment system set up for treating groundwater and the sediment could either be fixated/stabilized/solidified with the soils of DA-23 or transported to another disposal area and be capped along with that disposal area.

A monitoring program, employing bioassays, will be established for the surface water. Monitoring locations will be located on the unnamed stream, Gregg Branch and Bee Tree Creek. The purpose of this monitoring program is 1) to insure no adverse impact on these streams during implementation of the remedial action and 2) to establish a data base to use to measure the success of the remedial action implemented.

Treatability studies will be performed for the contaminated soils in DA-23 to determine the appropriate fixating/stabilizing/solidification process as well as the mixing ratios for the components involved in the process. Following replacement of the fixated/stabilized/solidified soils, DA-23 will be capped. Soils in disposal areas DA-6, DA-7/8, DA-9, DA-10/11, and the Acid Pit Area will be capped with a multi-layered cap which will include an inert synthetic liner. Where determined necessary, a venting system will also be installed.

A groundwater extraction system will be installed in both the Front Valley and in Gregg Valley. The extracted groundwater will either be treated in each valley or combined and treated through a single system. The treated groundwater will be discharged meeting all ARARs.

TABLE NO. 19 POTENTIAL MIGRATION CONTROL REMEDIAL ACTION ALTERNATIVES (Prior to Cost Evaluation)

ALTERNATIVE	DESCRIPTION
Extraction	
GWE-1	No Action
GWE-2	Weathered zone and surficial wells Gregg Valley (DA 7/8, 9, Acid Pits) and Front Valley (DA 23 Area)
GWE-3	Weathered zone and surficial wells Front Valley (DA 23 Area) Weathered zone wells and surficial trench Gregg Valley (DA 7/8, 9, Acid Pits)
Treatment	
GWT-1	No Action
GWT-2	Discharge Untreated Groundwater to POTW
GWT-3	Air Stripping Discharge to POTW
GWT-4A/B	Air Stripping Adsorption with GAC or Oxidation with UV/Ozone Discharge to POTW
GWT-5A/B	Precipitation/Flocculation with Sedimentation and Filtration Air Stripping Adsorption with GAC or Oxidation with UV/Ozone Discharge to Surface Water (Bee Tree Creek)

a) POTW — Buncombe County Metropolitan Sewer District
b) GAC — Granular Activated Carbon

TABLE NO. 20 COST EVALUATION OF POTENTIAL MIGRATION CONTROL ALTERNATIVES

ALTERNATIVE	SUMMARY DESCRIPTION	COST
GWE-1	No Action; Groundwater Monitoring	$300,000
GWE-2	Extraction Wells; Downgradient DA 23 and DA 7/8, Acid Pits, DA 9	$400,000
GWE-3	Extraction Wells; Downgradient DA 23, Combined Interception Trench and Extraction Wells Downgradient DA 7/8, DA 9, Acid Pits	$650,000
Treatment		
GWT-1	No Action (Couples with GWE-1)	($300,000 from above)
GWT-2	Discharge Untreated Groundwater to POTW	$100,000
GWT-3	Air Stripping Discharge to POTW	$225,000
GWT-4A	Air Stripping Adsorption with GAC or	$650,000
GWT-4B	Oxidation with UV/Ozone Discharge to POTW	$1,250,000
GWT-5A	Precipitation/Flocculation with Sedimentation and Filtration with Air Stripping Adsorption with GAC with	$1,300,000
GWT-5B	Oxidation with UV/Ozone Discharge to Surface Water (Bee Tree Creek)	$1,900,000

a) POTW — Buncombe County Metropolitan Sewer District
b) GAC — Granular Activated Carbon

TABLE NO. 21 RETAINED MIGRATION CONTROL REMEDIAL ACTION ALTERNATIVES

ALTERNATIVE	DESCRIPTION
Extraction	
GWE-1	No Action, Groundwater Monitoring
GWE-2	Weathered zone and surficial wells Gregg Valley (DA 7/8, 9, Acid Pits) and Front Valley (DA 23 Area)
GWE-3	Weathered zone and surficial wells Front Valley (DA 23 Area) Weathered zone wells and surficial trench Gregg Valley (DA 7/8, 9, Acid Pits)
Treatment	
GWT-1	No Action, (Couples with GWE-1)
GWT-2	Discharge Untreated Groundwater to POTW
GWT-3	Air Stripping Discharge to POTW
GWT-4	Air Stripping Adsorption with GAC Discharge to POTW
GWT-5	Precipitation/Flocculation with Sedimentation and Filtration Air Stripping Adsorption with GAC Discharge to Surface Water (Bee Tree Creek)

TABLE NO. 22 SUMMARY OF SOURCE AND MIGRATION CONTROL LTERNATIVES

ALTERNATIVE	DESCRIPTION	PRESENT WORTH COSTS	TECHNICAL ASPECTS	PUBLIC HEALTH ASPECTS	ENVIRONMENTAL ASPECTS	INSTITUTIONAL ASPECTS
1A	No Action; groundwater monitoring (To be coupled with GWE-1)	$282,800	None	Risk of soil contact DA 9 unabated; potential of limited groundwater contamination migration in future	No direct impact on source material; detection monitoring included	May not comply with SARA; Class 5 alternative
1B	No Action; Fence DA-9 groundwater monitoring	$295,000	None	Fence reduces risk of soil contact; potential of limited groundwater contamination migration in future	Sources of groundwater contamination not affected	Class 5 alternative
2A	Cap DA 9 No Action elsewhere; groundwater monitoring	$383,000	Proven technology; readily constructed; effective since waste is above water table	Risk of soil contact DA 9 eliminated; future migration of contaminants still possible	Continued potential of groundwater contamination from areas other than DA 9	Class 1 alternative; cap restricts use of DA 9
2B	Off-site landfilling DA 9 No action elsewhere; groundwater monitoring	$543,000	High level of remediation; uses available equipment	Risk of soil contact DA 9 eliminated; additional health risk during excavation and transportation	Continued potential of future groundwater contamination in all areas	Class 4 alternative
3A	Cap DA 7/8, 9, 10/11, 14, 23; no action DA 6, remainder of Acid Pits; groundwater monitoring	$1,079,600	Proven technology; readily constructed; effective since waste is above water table; special considerations in DA 10/11 and 23	Risk of soil contact eliminated; risk of future groundwater contamination reduced	Potential for groundwater contamination reduced in capped areas	Class 2 alternative; restricted use of capped areas
3B	Cap DA 6, 7/8, 9, 10/11, 14, 23; no action remainder of Acid Pits; groundwater monitoring	$1,155,300	Proven technology; readily constructed; effective since waste is above water table; special considerations in DA 10/11 and 23	Risk of soil contact eliminated; risk of future groundwater contamination reduced	Potential for groundwater contamination reduced in capped areas	Class 2 alternative; restricted use of capped areas

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TABLE NO., 22 SUMMARY OF SOURCE AND MIGRATION CONTROL LTERNATIVES
(continued)

ALTER-NATIVE	DESCRIPTION	PRESENT WORTH COSTS	TECHNICAL ASPECTS	PUBLIC HEALTH ASPECTS	ENVIRONMENTAL ASPECTS	INSTITUTIONAL ASPECTS
3C	Cap all on-site disposal areas; groundwater monitoring	$1,870,000	Proven technology; readily constructed; effective since waste is above water table; special considerations in DA 10/11 and 23	Risk of soil contact eliminated; risk of off-site groundwater contamination reduced	Potential for groundwater contamination reduced in all capped areas	Class 2 alternative; restricted use of capped areas
4A	Soil vent DA 14, 23 Cap DA 6, 7/8, 9, 10/11; groundwater monitoring	$2,277,200	Proven technologies; soil venting effective with volatile contaminants; mobile source material reduced	Risk of soil contact eliminated most areas; risk of future groundwater contamination reduced; soil venting may require carbon filters for emissions	Potential for groundwater contamination reduced in all areas;	Class 2 alternative; restricted use of capped areas
4B	HWT fixation DA 14, 23 Cap DA 6, 7/8, 9, 10/11; groundwater monitoring	$4,279,400 to $5,994,400	Long-term effectiveness with Chemtronics' soils are unknown, must be verified; mobile source material reduced	Risk of soil contact eliminated most areas; risk of future groundwater contamination reduced; additional health risk during excavation	Potential for groundwater contamination reduced in all areas;	Class 2 alternative; restricted use of capped areas
4D	On-site incineration of DA 14, 23 Cap DA 6, 7/8, 9, 10/11; groundwater monitoring	$5,684,200 to $6,773,500	Proven technology; extremely effective; transportable unit not available until 1988; moble source material reduced; ash may require special handling	Risk of soil contact eliminated; risk of future groundwater contamination reduced; additional health risk during excavation and staging	Potential for groundwater contamination reduced in all areas;	Class 2 alternative; restricted use of capped areas
5C	On-site incineration of all significant soils and all buried drums; groundwater monitoring	$7,313,300 to $8,725,100	Proven technology; extremely effective; transportable unit not available until 1988; significantly reduce source material; ash may require special handling	Risk of soil contact eliminated; greatest reduction in risk of future groundwater contamination; additional health risk during excavation and staging	Greatest reduction in potential for groundwater contamination;	Class 2 alternative; fewest restrictions on future use of disposal areas
	No Action DA 24	$0	None	PCB levels are below remediation standards	None	Class 5 alternative
	Drain on-site Pond	$2,000	None	None, stocking and fishing no longer	None	Class 5 altern

TABLE NO. 22 SUMMARY OF SOURCE AND MIGRATION CONTROL LTERNATIVES
(continued)

ALTER-NATIVE	DESCRIPTION	PRESENT WORTH COSTS	TECHNICAL ASPECTS	PUBLIC HEALTH ASPECTS	ENVIRONMENTAL ASPECTS	INSTITUTIONAL ASPECTS
GWT-1	No Action; groundwater monitoring (To be coupled only with GWE-1)	$282,800	None No treatment reqired	None	None	None; Class 5 alternative
GWT-2	Untreated discharge to POTW	$280,300	POTW capable of achieving high levels of removal; transmitting groundwater poses no difficulties; possible transmission line limitation	No pass through toxicity anticipated	Expect high level of removal; on-site groundwater is remediated	Modification of pretreatment permit; discharge may exceed standards; potential Class 3 alternative
GWT-3	Air stripping prior to discharge to POTW	$437,600	Air stripping is proven technology; POTW capable of removing contaminants; possible transmission line limitation	No pass through toxicity anticipated	Expect high level of removal; on-site groundwater is remediated	Modification of pretreatment permit; discharge will meet TTO level; Class 1 alternative
GWT-4	Air stripping, GAC prior to discharge	$992,600	Proven technologies; GAC cannot be regenerated because of explosives; possible transmission line limitation	No pass through toxicity anticipated	Expect high level of removal; on-site groundwater is remediated	Modification of pretreatment permit; discharge will meet TTO level; Class 2 alternative
GWT-5	Metals removal, air stripping, GAC prior to discharge to a surface water	$1,594,700	Proven technologies; operator may be required; GAC cannot be regenerated	None, effluent will meet drinking water standards	On-site groundwater is remediated; sludge generated may reqire special handling	Requires NPDES permit may require hazardous waste handling; Class 2 alternative
GWE-1	No Action; groundwater monitoring	$282,800	None	No effect on present groundwater contamination; no present receptors identified	Possible future migration of contaminated groundwater	May not comply with all ARAR's; Class 5 alternative
GWE-2	Extraction wells in Front and Gregg Valleys	$378,500	Proven technologies; extraction wells are capable of recovering groundwater contaminants; expect moderate level of removal due to low aquifer yield	Significantly minimizes potential for groundwater contaminants to reach receptors in future	Significantly reduces future migration of contaminated groundwater	Class 2 alternative

TABLE NO. 22 SUMMARY OF SOURCE AND MIGRATION CONTROL LTERNATIVES
(continued)

ALTERNATIVE	DESCRIPTION	PRESENT WORTH COSTS	TECHNICAL ASPECTS	PUBLIC HEALTH ASPECTS	ENVIRONMENTAL ASPECTS	INSTITUTIONAL ASPECTS
GWE-3	Extraction wells in Front and Gregg Valleys; interception trench in Gregg Valley	$653,600	Proven technologies; extraction wells are capable of recovering groundwater contaminants; expect moderate level of removal due to low aquifer yield; additional installation considerations	Significantly minimizes potential for groundwater contaminants to reach receptors in future	Significantly reduces future migration of contaminated groundwater	Class 2 alternative

These recommended alternatives meet the requirements of the NCP, 40 CFR Section 300.68(j) and SARA. This recommended remedy permanently and significantly reduces the volume of hazardous substances in the groundwater, reduces the toxicity and/or mobility of contaminants in the soils.

6.2 OPERATIONS AND MAINTENANCE

When the remedy is completed, long-term operation and maintenance (O&M) will be required for the caps along with long-term monitoring of the groundwater. This will assure the effectiveness and permanence of the source control remediation and groundwater remedies. Long-term O&M will also be required for monitoring the groundwater extraction systems and the groundwater treatment system(s).

6.3 COST OF RECOMMENDED ALTERNATIVE

Capital cost for groundwater remediation is estimated to be $239,000 with system O&M cost at $139,500 for 30 years, which includes sampling and analysis. The total present worth cost of the groundwater remediation is $378,500.

Capping disposal areas DA-6, DA-7/8, DA-9, DA-10/11 and the Acid Pit Area with a multi-layered cap is estimated to be less than $1,282,500. Fixation/stabilization/solidification of the soils in DA-23 followed by capping will cost an estimated $3,998,800, with O&M cost at $280,500 for 30 years. The O&M costs for all caps is $362,400. The above costs include engineering, overhead, profit, contingency, and administrative fees.

The present worth cost of this remedy, including both source and migration control remediation ranges from $6,247,300 to $8,242,900.

6.4 SCHEDULE

The planned schedule for remedial activities at the Chemtronics Site is expected to be governed by a Consent Decree to be signed by the PRPs, but tentatively is as follows:

March 1988 - Approve Record of Decision
September 1988 - Begin Remedial Design/Treatability Studies
December 1988 - Install Extraction Wells
March 1989 - Complete Treatability Study
May 1989 - Complete Remedial Design and Mobilize

6.5 FUTURE ACTIONS

Following completion of remedial activities, long-term groundwater monitoring will be required to assure effectiveness of the groundwater cleanup and source control remediation. Maintenance of the caps on disposal areas DA-6, DA-7/8, DA-9, DA-10/11, DA-23, and the Acid Pit Area. Action levels for contaminants in the groundwater will be set with the State of North Carolina's concurrence. If these levels are reached during any sampling episode after the remedial activities achieve goal, this will trigger an immediate permanent remediation of the disposal area responsible for this level of contamination is reached downgradient of that disposal area. The action levels expected to be implemented are MCLs and PPLVs.

6.6 CONSISTENCY WITH OTHER ENVIRONMENTAL LAWS

A remedial action performed under CERCLA must comply with all applicable Federal, State and local regulations. All alternatives considered for the Chemtronics Site were evaluated on the basis of the degree to which they complied with these regulation. The recommended alternatives were found to meet or exceed all applicable environmental laws, as discussed below:

- Resource Conservation and Recovery Act (RCRA)

  The recommended remedy for soil contamination includes capping and fixation/stabilization. This is an on-site remedial action which will meet the requirements of this regulation.

- Clean Water Act

  Trace amounts of contamination were detected in surface water. The soil and groundwater remediation will result in an end top the water contamination.

- Floodplain Management Executive Order 11988

  The CERCLA areas do not lie within a floodplain and thus are not subject top the requirements of E.O. 11988.

- Department of Transportation

  Transport of hazardous substances is regulated by the Department of Transportation (DOT).

- Occupational Safety and Health Administration

  A health and safety plan will be developed during remedial design and will be followed during field activities to assure that regulations the Occupational Safety and Health Administration (OSHA) are follc

* Safe Drinking Water Act

Maximum Contaminant Levels (MCLs) established under the Sate Drinking Water Act were found to be relevant and appropriate to remedial action at the Chemtronics Site. The cleanup goals for groundwater were established in Section 4.

* National Pollutant Discharge Elimination System

Discharge of treated groundwater is part of the recommended remedial alternative. This discharge will meet effluent limit requirements of the National Pollutant Discharge Elimination System (NPDES). Aquatic life chronic toxicity values, which are used in the NPDES permitting system, were used in determining the groundwater cleanup goals in Section 4.

* Endangered Species Act

The recommended remedial alternative is protective of species listed as endangered or threatened under the Endangered Species Act. Requirements of the Interagency Section 7 Consultation Process, 50 CFR, Part 402, will be consulted during remedial design to assure that any endangered or threatened species, if identified, are not adversely impacted by implementation of this remedy.

* Ambient Air Quality Standards

The soil and groundwater treatment systems will be designed and monitored to assure that air emissions meet all State and Federal standards.

* State Drinking Water Standards

Maximum contaminant levels established by the State of North Carolina regulations; are adopted from those of the Federal Safe Drinking Water Act, and will be met.

7.0 COMMUNITY RELATIONS

Fact sheets were transmitted to interested parties, residents, media, and local, state, and federal officials throughout the RI/FS process. The Agency also conducted several formal and informal public meetings. Two audio-visual presentations were developed by Warren Wilson College to help educate and inform the local community of the Chemtronics Site and the Superfund process.

Four information repositories were established. They are located at:

Buncombe County Emergency Services
P.O. Box 7601
Asheville, NC 28807
Contact: Mr. Jerry VeHaun

Chemtronics Site Information Bureau
70 Woodfin Place
Asheville, NC 28814

University of North Carolina at Asheville
One University Heights
Asheville, NC 28804-3299
Contact: Dr. Gary Miller

Warren Wilson College Library
Warren Wilson College
701 Warren Wilson College Road
Swannanoa, NC 28778
Contact: Ms. Laura Temple-Haney

The Administrative Record is located at Warren Wilson College's library.

A public meeting was held on February 23, 1988, at the Charles D. Owens High School in Swannanoa, NC. At this meeting, the remedial alternatives developed in the FS were reviewed and discussed and EPA's preferred remedial alternative was disseminated. The migration control alternative presented is as described prior in Section 6.1 Description of Recommended Alternative. Several source control remedial alternatives were presented. EPA's preferred source control alternative for Disposal Areas 6, 7/8, 9, and 10/11 was on-site incineration. On-site incineration was preferred because of its permanence in removing/eliminating the contaminants present on-site. A substitute remedial alternative was also described to the public for these disposal areas and this was to cap and monitor. For the other two disposal areas, the source control remedial alternative identified in Section 6.1 Description of Recommended Alternative were the ones presented in the public meeting.

Numerous comments were voiced at the public meeting. Questions and comments fell into six major categories including: concern about public health and a need for a health survey, thoroughness of research efforts to determine the extent and impact of contamination, adequacy or effectiveness of the proposed remedy to protect human health and the environment, time involved in cleaning up the Site and restoring the land, current Chemtronics facility operations, and government responsiveness to community concerns and inquires/availability of Superfund Technical Assistance Grants (TAGs)/extension of the FS public comment period.

The public comment period was initially to conclude on March 18, 1988 but at the request of the attendees at the public meeting, the public comment was extended to April 1, 1988. During the comment period, approximately 340 letters/postcards and a petition containing approximately 830 names was received by the Agency. Over 80 percent of the letters/postcards and the petition requested the Agency to extend the public comment period two months past the day the community received the TAG monies. Approximately 35 percent of the letters/postcards opposed on-site incineration and approximately 15 percent of those who wrote were negative towards capping of the disposal areas. None of the correspondences received discussed or commented on the migration control remedial alternative.

8.0 STATE INVOLVEMENT

Since it is expected that the RD/RA will be undertaken by the PRPs, there has been no request made under CERCLA, Section 104(c) for the State to contribute ten percent of all costs for the remedial action.

APPENDICES

APPENDIX A

RESPONSIVENESS SUMMARY

This community responsiveness summary is divided into the following sections:

SECTION I. Overview. This action discusses EPA's preferred alternative for remedial action and public reaction to this alternative.

SECTION II. Background on Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during remedial planning activities at the Chemtronics Site.

SECTION III. Summary of Major Comments Received During the Public Meeting and the Public Comment Period and EPA's Responses to These Comments. Both the comments and EPA's responses are provided.

SECTION IV. Remaining Concerns. This section describes the remaining community concerns that EPA should be aware of in conducting the remedial design and remedial action at the Chemtronics Site.

SECTION I. OVERVIEW

At the time of the public meeting and the beginning of the public comment period, EPA presented its preferred alternative to the public. This alternative addresses both the soil and groundwater contamination problems at the Site. The preferred alternative specified in the Record of Decision (ROD) includes: treatment of contaminated groundwater, soil fixation/stabilization/solidification, capping, and long term monitoring.

In the public meeting, held February 23, 1988, two remedial alternatives were proposed to the public for source control for the four disposal areas that contain buried drums. On-site incineration of the contents of these disposal areas was identified as EPA's preferred alternative. This was selected because it eliminates, permanently, the source of contamination. In case the Agency received negative feed-back on this alternative, we also proposed capping these same disposal areas with a multi-layer cap which includes a synthetic liner.

The community, in general, favors remedial action at the Site.

SECTION II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

The Chemtronics Site is located in the community of Swannanoa, a rural area of Buncombe County, east of Asheville. The population in this area is increasing as the city of Asheville grows.

Prior to 1984, community concern over the Chemtronics Site was generally low, according to local officials and residents. Only a small number of residents had concerned themselves with Site activities.

The Site was first brought to the attention of state officials in 1979 as a result of complaints from a resident living near the Site. On several occasions the resident contacted state and local officials to complain of the foul odors and air pollution coming from the Site. In addition to the air pollution and odors, the resident complained to state officials of open acid pits existing on the Chemtronics property, claiming that his dog was temporarily blinded after falling into one of the pits. These complaints first to local, then state, then federal officials, led to an investigation by the North Carolina Department of Natural Resources and Community Development (NCDNRCD) in 1979 and subsequent EPA involvement beginning in June 1980.

Monitoring of the Site, conducted by the NCDNRCD in 1979, revealed a definite organic odor in the water. As a result of this finding, personnel from EPA's Surveillance and Analysis Division (SAD) initiated an investigation in June 1980. The combined results from all of the samples taken during this investigation indicated the presence of 62 organic compounds and 20 metals in the waste pits, monitoring wells and streams samples. In addition, EPA detected cyanide in three of the monitoring wells on the Site. The results of this this investigation led to EPA's decision to place the Chemtronics Site on the proposed Superfund National Priorities List (NPL), published by EPA in December 1982.

In February 1984, Warren Wilson College conduct its annual environmental studies seminar and used the Chemtronics Site as a case study. Citizens, faculty members, representatives of local, regional and state agencies, EPA representatives, as well as the president of Chemtronics, attended. As a result of the seminar, the Buncombe County Commissioners established the Buncombe County Hazardous Waste Advisory Board (BCHWAB), which demonstrated an interest in EPA's response activities at the Chemtronics Site.

According to citizens and EPA officials, primary concerns of the community include the groundwater contamination and a lack of sufficient information concerning health and environmental hazards created by the Site. A few isolated concerns were also expressed by several residents. One resident complained about a reported decrease in property value and another resident expressed concern that the French Broad River, which the community has cleaned up in recent years and plans to use soon as a water supply, could be in danger of contamination. The point at which water will be extracted from the French Broad River, however, is upstream from the Swannanoa River.

The following points of concern are common to much of the community and may affect relations at the Chemtronics Site:

a) Perceived Lack of Objective Information From EPA. Area resident have expressed skepticism about the completeness and objectivity of all EPA generated information; both information provided at meetings and information provided in the form of reports or other EPA documents. A core group of citizens, including members of the BCHWAB, and instructors at the Warren Wilson College and the University of North Carolina at Asheville, are highly interested in the details of the scope of work and schedule for Site activities to be conducted by EPA. These citizens have a good technical understanding of the problems and issues associated with hazardous waste sites and are interested in reviewing and commenting on reports and plans developed for the Chemtronics Site. In addition, these citizens are sensitive to anything that may appear to be a "public relations" campaign; they are interested in knowing about Site activities either first-hand or from what they consider an impartial or objective source of information. If details of Site reports or plans cannot be made available for public review and comment, for example because of enforcement actions, the citizens expressed an interest in being informed of what is not available and why in a timely manner.

b) Effects of BZ Production. Although facts about BZ and its production are now being released, at the time of production, neither the Army nor the BZ-manufacturing companies notified the public that such a chemical was being manufactured at the facility. The true nature of the July 7, 1965 fire that required the evacuation of more than 2,000 residents was for a long time a kept secret. The news media in the area publicized the alleged hallucinogenic effects of BZ. No evidence of the actual chemical BZ have been found on-site; the material in the drums reportedly consisted of contaminated clothes and boots used in BZ production. According to EPA, the material found in the drums poses no real threat to human health. The two exposed drums labeled BZ and CS/BZ were removed from the Site in February 1985.

Since the discovery of the BZ-contaminated materials in August 1984, people have expressed alarm that the production of such a hazardous chemical in their neighborhood was kept secret from them for so long. Because the discovery was made only recently, residents have expressed concern that EPA may not know of everything that is buried at the Site. Some residents fear that any attempted cleanup actions could unearth more serious, unanticipated problems or could pass over unidentified areas of waste disposal.

c) Groundwater and Surface Water Contamination. EPA first detected groundwater contamination at the Chemtronics Site in 1979. Most of the residents in the Swannanoa Valley rely on private residential wells for their drinking water supply. To date, no residential wells have been found to be contaminated due to the disposed material at Chemtronics. Geologic characteristics of the area make a change in the flow and speed of contaminated groundwater a slight possibility. Such a change could increase the potential for contamination in local wells. In November 1984, EPA sample 13 residential and industrial wells in response to citizen fears that groundwater quality in the area had deteriorated. EPA found no evidence of contamination in residential wells, but discovered contaminated wells on the property of Charles D. Owens Manufacturing near Chemtronics. Existing evidence suggests that the contamination of these wells was not due to spills from the Chemtronics facility, according to Donald Link of the NCDNRCD.

d) Employee "Right to Know". Intertwined with community concern over cleanup of existing hazardous wastes at the Chemtronics Site is community concern over current chemical production procedures and release of information to workers and residents concerning the health effects associated with chemicals produced at the Chemtronics Site. The "Right to Know" issue is gaining increasing public attention in Buncombe County. This issue received additional attention because of the announcement that BZ was produced at the Chemtronics Site. Individuals involved with he "Right to Know" campaign have expressed an interest in having EPA, in consultation with Chemtronics officials, prepare and conduct a presentation on the past and present activities at the facility, identifying the substances handled and ways for ensuring worker safety and health.

Another concern expressed by residents involved with the "Right to Know" efforts in Buncombe County was that Chemtronics, Inc. has reportedly hired a group called "Handiskills" to work in manufacturing chemical warfare decontamination kits. The group is comprised of mentally and physically handicapped persons. Several area residents expressed concern that these employees are unaware of the potentially dangerous products manufactured by Chemtronics and the resulting hazards of the positions in which they work and that the Handiskills employees may be less able than other employees to react fast enough to protect themselves in an emergency situation at the Chemtronics facility.

III. SUMMARY OF PUBLIC COMMENTS RECEIVED DURING THE PUBLIC MEETING AND THE PUBLIC COMMENT PERIOD AND AGENCY RESPONSES.

Comments raised during the Chemtronics public meeting and public comment period are summarized briefly below. The comment period was open from February 23 to April 1, 1988 to receive comments from the public on the draft Feasibility Study and proposed remedial alternative.

Since there was a strong response from the community in both the public meeting and the following comment period, the summaries of both are presented separately below.

Public Meeting

The public meeting was held on February 23, 1988 at the Charles D. Owens High School auditorium. Questions and comments fell into six major categories including: concern about public health and a need for a health survey, thoroughness of research efforts to determine the extent and impact of contamination, adequacy or effectiveness of the proposed remedy to protect human health and the environment, time involved in cleaning up the Site and restoring the land, current Chemtronics facility operations, and government responsiveness to community concerns and inquires/availability of Superfund Technical Assistance Grants (TAGs)/extension of the FS public comment period.

Questions and comments from the public are summarized and paraphrased below, followed by a summary of EPA's or another panelists response.

A. Public Health and the Need for a Community Health Survey

Several citizens expressed concern about health hazards and requested that a community health survey be conducted to determine whether many of the health problems noted in the area, particularly cancer cases, were related to the site. The Harrison Hill neighborhood was specified as one area in which residents consider the number of cancer cases to be suspiciously high. Representative questions or comments included:

Q: There are something like nine cancer cases on this road and these seem to be higher than normal statistics. Will the health agency do a survey of this and neighboring areas to check this out?

Q: How can we get a check done on this community and the Bee Tree Valley? Sixteen, of the people I used to work with at Chemtronics are now dead. Do you have to have 24 out of 25?

ATSDR: ATSDR looked at this site and found no evidence of the key factors that indicate a public health risk, these being, paths by which the public could be exposed to the chemicals, such as breathing them, swimming in a contaminated creek, or eating vegetables or animals that have absorbed chemicals into their bodies at levels that pose a human health threat. There was no evidence that chemicals migrated off the site where residents could be exposed to them. Sickness exists in every healthy population; the American Cancer Society estimates that one-third of the American population will contract and die from cancer. ATSDR interviewed 16-18 men and women who had worked at Chemtronics to try and determine if the health problems they reported could be linked to chronic historical exposure to working with CS and BZ. We were unable to link them.

Q: How could you determine that without taking tests like blood and urine tests? How can you determine that by just sitting and talking to someone for 15 minutes?

ATSDR: ATSDR's effort, working with Dr. Leffingwell of the U.S. Centers for Disease Control, was to talk with the concerned employees and try and establish whether or not they experienced common symptoms or other factors in common that could link their health problems to chemical exposure at the Chemtronics facility. The information reported by these former employees did not establish a connection to the facility.

Q: Where can we get someone to come out and talk with the people in the area, do a study, or send a questionnaire on health problems.

ATSDR: You would call Dr. Robert Levine at the Buncombe County Health Department, in Raleigh. His program has resources to address community health concerns like cancer, or other abnormalities such as the rashes that you report. ATSDR's involvement with EPA and the State focuses on hazardous waste sites. If we detect that chemical exposures have occurred in concentrations sufficiently high to be a human health risk, ATSDR would proceed with further steps like conducting medical studies, testing of area residents, or setting up a local clinic.

COMMENT: We've called the County dozens of times and we've called the State, now who do we do to?

ATDSR: Call the North Carolina Environmental Epidemiology Group in the Department for Health Services at (919) 733-3410.

COMMENT: A couple of years ago a family moved into a place across from the Chemtronics site and pastured horses on property that had been undisturbed for over twenty years. Within a week both animals died and veterinarians had no idea what killed them. If a horse dies, people die. Horses are a lot stronger than people.

EPA: No response.

Q: Why are you not going to clean up my property? According to a report I received, my property has traces of tear gas and other chemicals. Are you willing to write me a letter stating that these chemicals will not harm my family in any way?

ATSDR: The levels of CS found on your property were extremely low. Nothing was found to be migrating off the site at levels to produce a public health threat. The presence of trace amounts does not constitute a public health threat.

Q: If you found traces at the level at which they sampled how do you know there aren't more chemicals at deeper levels? They've been in there for, what, 20 years?

EPA: The sampling that was done penetrated to bedrock and came up clean.

COMMENT: I was part of the company and am very familiar with the operation, the company's safety program, and the large health problems people are having. I do believe there are health problems related to the chemicals, for workers in any chemical plant as far as that goes, and I think this does need to be looked into more carefully.

B. Thoroughness of RI/FS Research Efforts to Determine Extent and Impact of Contamination

A number of citizens questioned whether researchers performing the remedial investigation had considered all possible sources of contamination at the site or had fully considered chemical characteristics that could influence the extent or the impact of the contamination. Their comments and inquiries were:

Q: Who determined all of the sites that were tested? Were the magnetomtry readings taken in every area, including off-site locations, where workers indicated material had been buried?

EPA: The identification of on- and off-site areas to be tested was made based on site documents belonging to the PRPs, responses from community members to an EPA request issued to the public in 1984 for information that would help the Agency locate disposal areas, and information EPA received from former Chemtronics employees who knew about disposal areas. Magnetometry readings have not been taken in all areas alleged to have been used for drum disposal. However, a geophysical study which provides equivalent information, was carried out for all those areas.

Q: What equipment was used to determine the bedrock pattern at the Chemtronics site? Can you be confident that 37 wells are actually accounting for cracks in the bedrock? It is a complex area here that drains into Bee Tree Creek and other branches where I fish. I want a guarantee that it won't be contaminated so that I can fish in the rivers without worrying about ingesting chemicals.

EPA: Ground-water monitoring wells were placed at distances of 400 feet, 800 feet, and 1200 feet downgradient of the site. Studies of a worst case scenario have shown that if no action were to be taken at the site, contaminants would take over 25 years to migrate to the Bee Tree Creek.

Q: Were ground-water wells drilled in-all locations tested that were supposed to have contained BZ? Is a record available of where and to what depth you drilled?

EPA: Wells were installed at all locations except one. A ground-water monitoring well was not installed directly into one disposal area due to the highly concentrated chemical wastes buried in drums in that area. We did not want to risk puncturing these drums. Subsurface borders were placed around this area as an added safeguard against leakage and migration.

Q: Were the drums found on-site tested to see if they contained BZ by-products?

SIRRINE ENVIRONMENTAL CONSULTANTS: All of the drums were not sampled, because of the risk of leakage. Exposed drums and materials surrounding the drums were tested. The major concern is not so much whether BZ is in the drum but whether any of it has migrated.

Q: Since BZ tends to be soluble in an acidic, as opposed to aklaline condition, won't the presence of acid pits on the site hike the chance that the chemicals will migrate? Has this been considered?

SIRRINE ENVIRONMENTAL CONSULTANTS: BZ does become more soluble where there are acid conditions however at this site the pH levels are neutral. The acid pit area is not a BZ disposal area.

COMMENT: You seem to have used different testing standards for the Chemtronics property where you sampled for BZ, CS and other chemicals, from off-site properties where you tested for indicator chemicals.

EPA: A full testing scan was run on all samples collected from off-site and on-site areas. Those analyses included BZ & CS.

Q: Why was the landfill above Tropigas not mentioned? Did you say that Tropigas was a non-hazardous site?

EPA: The area was investigated. Ground-water sampling was conducted and no contaminants were found in the ground water. According to EPA's data it is a non-hazardous site.

Q: Did Chemtronics provide you with a list of each of the chemicals they've used and would it be available? When you say "hot spots" would that be as much as two drums of cyanide? I remember two drums of cyanide back in 1979 and can give you the name of the director of the lab who can tell you about them.

EPA: Chemtronics is required under the Superfund and other laws to provide that information however there is another list that they requested be held confidential for business purposes. We didnt find Cyanide. We will look into any information that can be provided.

C. Adequacy/Effectiveness of EPA Proposed Remedy to Protect Human Health or the Environment

Several attendees expressed concern over whether the proposed remedy for the site was adequate or the most effective option for protecting the health of community residents and the environment. Many points focused on on-site incineration and ground-water extraction, two components of the remedial alternative. Questions were also raised about long-term monitoring of the site. These points are as follows:

Q: Why was there no consideration of having a hazardous waste management firm remove the drums and transport them to an approved incineration facility?

COMMENT: This area has not been well researched and many incinerators in this vicinity have been problematic.

Q: Will there be an environmental impact study performed on the use of an on-site incinerator? We have problems in this area with air inversions.

Q: Will you check each drum planned for incineration to make sure that any CS contained in it is decontaminated?

Q: If the air becomes contaminated, how will that affect our food chain? We have dairy cattle, raise our own vegetables and raise our own animals for meat.

Q: If you burn the contaminants, won't they be released into the air?

Q: If incineration is not dangerous, why was the valley evacuated in 1967 when the Chemtronics Plant caught fire?

Q: Where else has on-site burning of the same chemicals been successfully performed so that we can compare test burns to those results? Would we be the first such incineration example?

Q: What will the incinerator be used for? How will its use affect local industry? What kinds of toxic regulations are in place?

Q: Will temperatures in the incinerator be sufficient to achieve destruction of the toxics like chromium or lead, and prevent dioxin from forming?

Q: Would the ash from the incinerator be buried and capped?

Q: If you incinerate, will you test milk and dairy animals in the area to see if anything could be escaping or not properly done so that we know if what we are consuming will be healthy?

SIRRINE: There may be some confusion about incineration in the sense of comparing it to burning or an open flame. The incineration of the hazardous wastes at the site would involve temperatures of 1800° and higher where wastes would remain inside the incinerator for at least 30 minutes. Properly designed, constructed, tested and operated incinerators should destroy all the wastes and render the ash non-hazardous. Testing animals and milk in the vicinity goes beyond the normal scope of what is addressed in the FS, which takes information generated by the RI and develops remediation alternatives. Those issues are not at risk at this point. There are numerous sites using on-site incineration. For chemicals like BZ, the U.S. Army facility at Pine Bluff, Arkansas could be contacted to obtain information.

EPA: Before an incinerator would be allowed to operate, pilot studies would be done to ensure that 99.99% destruction of chemical contaminants occurs. Stack tests would also be done to monitor emissions and if the stack test results cause any doubt about the incinerator performance, the engineering design would have to be changed. EPA has the authority to deny issuance of the permit necessary to operate an incinerator if the Agency is not convinced that it would protect human health and the environment. Stack tests are continually run to ensure that the required level of destruction is taking place. Any residual, or ash, from the incinerator would be tested before it is disposed of and capped to ensure that all the waste, including any metals, are destroyed. If an incinerator were to be selected for treatment of Chemtronics wastes, no contaminants from other sites or industries would be brought to the site.

EPA did consider the alternative of removing wastes from the Chemtronics property, and transporting them to an off-site incinerator. The level of effectiveness of the remedy in each case would be the same, however, off-site incineration would cost roughly an additional 11 million dollars. Transportation safety issues are also involved with the off-site option. For these reasons, EPA would prefer the on-site incineration option to transporting the material.

Q: If your proposed ground-water extraction system were to indicate that there is no longer any contamination, would you cease extraction -- continue to monitor? Would a period of heavy rain in the future cause the water table to rise, come in contact with the contaminant source, and re-contaminate the ground water?

SIRRINE: The waste is buried sufficiently high above the water table to prevent contact, even in abnormal conditions though even then fluctuations in the water table are slight. The capping option being considered for the site is designed to prevent infiltration of rain and other moisture that would carry contaminants down to the ground water. The extraction system would then collect, remove, and treat existing contaminated ground water.

Q: Would Chemtronics still be allowed to test their explosives near ground-water monitoring wells as they did the other day? Private well water levels have dropped as a result of the explosions.

EPA: A monitoring program on the extraction system would be set up to make sure that it was intercepting the entire contaminant plume. This monitoring system would detect any well failures. The thickness of rock layers would protect these wells against failure due to explosions. Once the wells were installed, if Chemtronics' activities distrupted the system, EPA would require them to install a whole new system.

Q: How long will EPA monitor the site? Would this be on- and off-site wells? And how long would the cap be monitored?

ATSDR: ATSDR is recommending that monitoring be done on on-site and off-site wells to make sure nothing goes off-site; EPA will determine the monitoring period.

EPA: Basically the monitoring period is long-term which could range from 10 to 50 years. Most likely there would be a thirty year monitoring period, the lifetime of a cap. The system would be re-evaluated every five years.

D. Time Required to Clean Up the Site, Restore the Land

Questions or comments expressing concern about the length of the Superfund process or time required for recovery of the land or water resources were as follows:

Q: If the area containing waste is to be incinerated, how long will it take to return it to usefulness or to its full potential?

Q: How long will the cleanup take -- three months? Three years?

SIRRINE: That will depend somewhat on the remediation selected. If the decision is based on the fact that exposure to the chemicals is not occurring, the selection would be to cap the area, extract and treat the contaminated ground water, and continue to monitor to make sure no problem develops. Those procedures would take place quickly. Treatability and pumping tests are needed to be able to estimate closely, how long it would take to install and run the ground-water extraction system. Typical time-frames are five to seven years or more. Our conservative estimate (to figure costs) is 30 years but this will become more possible to determine once tests are run. For incineration, depending on the alternative selected, special design, safety and test procedures would have to be set up at the site. After that the actual incineration could take three years.

Once destruction of materials is completed, the ash would be buried and the ground re-vegetated. At that time the land would be available for any use designed for the area.

E. Chemtronics Operating Procedures

The following two questions were posed regarding current practices at the Chemtronics facility:

Q: Is there any explanation as to why on holidays and weekends, we get terrible chemical odors?

Q: I'm concerned about what we breathe every day. I dont understand why it hasn't been fully covered.

EPA: We in the EPA Superfund Program are not in position to respond to the questions of air emissions from the company's day-to-day chemical plant operations. We cannot guarantee that you are not getting exposed to air releases that are not regulated by this program. There are no releases of pure chemicals. The odors mentioned or any releases that may have occurred recently should be reported to the County Health Department the State, or the Occupational Safety and Health Administration (OSHA).

Q: Why, when we call Chemtronics to ask about explosions do they say they are not permitted to tell us?

ROBERT KING,
CHEMTRONICS PRESIDENT: You will get an answer to those questions.

F. Government Responsiveness to Community Concerns or Inquiries/Need to Extend Public Comment Period/Technical Assistance Grants

Several aspects of concern were expressed regarding government responsiveness to citizens or the degree to which EPA and other agencies included citizens in the RI/FS process. Two or three questions regarding Technical Assistance Grants and the RI/FS process were inaudible to the court reporter. This section includes a major point EPA made in response to those questions Questions or comments representing these concerns are as follows:

COMMENT: Only one copy of the draft FS was sent to the County in December and three people knew about it. I was asked for my comments 48 hours before the PRP's were to meet, and had not been informed that the FS was available. There was no way I could go through four inches of material in 48 hours. When I asked about the date of the public hearing, the official response was "EPA only has to notify the media three days in advance." Also, a videotape prepared by a public interest organization as part of the public relations package for Chemtronics was available in September but not shown to the public until two weeks ago due to a bureaucratic nightmare. EPA should explain the reason for this and should extend the public comment period. I realize EPA is under pressure to complete certain activities at many sites by the end of March, but three weeks is insuffcient time. As of tonight we have two copies of the FS, which we will get out to the public and we will get whatever expertise needed to review this but we cannot do it in three weeks.

EPA: The FS was sent out to all concerned parties however it has been learned that the Buncombe County Hazardous Waste Advisory Board no longer exists. EPA was not informed of its discontinuance. EPA will consider the request to extend the public comment period.

Q: Is there a responsiveness summary for the RI? there were a number of comments from the community on the RI and most of us got no answer.

EPA: The responsiveness summary process is not required for the RI. To our knowledge Issues raised at the RI public meeting were addressed in some form.

COMMENT: I understand there are requirements but also there is the philosophy that community input is encouraged and it is discouraging to put in many questions and receive no answers.

COMMENT: There are people who are not sure their question will be answered, and who fear that they are going to be left out, which has been the case with siting incinerators. It is clear to me there is a problem of trust.

EPA: EPA has not decided upon incineration at this site. If community members submit comments during the comment period, they will be considered. A responsiveness summary will be prepared that will reflect EPA's consideration of questions and comments. As long as there is Superfund activitiy on a site, citizens can apply for Technical Assistance Grants (TAG). Even if the EPA Record of Decision is signed, citizens can have input to the remedial design. Procedures for the TAG program are expected to be published in the Federal Register by the end of March 1988, and the application process is expected to get under way this fall. Interested citizens can send EPA Region IV a letter of intent to apply for the grant. EPA will send the TAG manual and fact sheets to interested parties, upon request as soon as they are available to the Agency.

Public Comment Period

Included are several letters received by the Agency during the public comment period as well as the Agency's response.

IV. REMAINING PUBLIC CONCERNS.

In addition to those concerns voiced at the public meeting, some additional public concerns are described below.

- Additional sampling/analysis of residential wells for volatile organics.
- Responsibility of long term monitoring of the groundwater and maintenance of the caps.
- Effectiveness of the monitoring system.

ERRB
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EPA — REGION IV
ATLANTA, GA.

Anne Noah
140 Riddle Rd.
Swannanoa, N.C.
28778

March 20, 1988

Jon Bornholm
Site Project Manager
U.S. E.P.A.
345 Courtland St., N.E.
Atlanta, Georgia 30365

Dear Sir:

I am concerned about the proposed cleanup of the hazardous waste at the Chemtronics Site in the Swannanoa Valley. Also I feel that not enough testing has been done at the Tropi-Gas and Buckeye Cove Sites. I feel that off-site monitoring for health reasons should be done during the cleanup.

I would like to see EPA give a further extension of time to the community, so they can get technical help for an independent review of the EPA plan.

Thank you for your help.

Sincerely,

Anne Noah

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MAY 0 3 1988

WD-SFB

Ms. Anne Noah
140 Riddle Road
Swannanoa, NC 28778

Dear Ms. Noah:

This correspondence is in response to your letter the Agency received on March 23, 1988 during the public comment period on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community was selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

SARA also encourages the Agency to select permanent solutions for the clean-up at Superfund Sites. After the Agency reviewed all the remedial technologies identified in the draft Feasibility Study for addressing source control for the contaminants found in the disposal areas containing drums, the only remedial alternative that achieves this goal is incineration. Off-site incineration was eliminated from consideration because it was estimated that it would be more cost effective to incinerate these materials on-site.

Under ideal conditions with the incinerator working as designed, the only compounds that would be entering the environment from the incinerator would be the ash/soil residue from the burnt soils and water vapor and carbon dioxide out of the smoke stack. Therefore, virtually complete destruction of the contaminants would be achieved.

This remedial alternative was not selected for several reasons. First and foremost, is the threat posed by live ordnance buried along with the drums to the workers who would be involved in the excavation of these drums in order to prepare them for incineration. The second issue considered was the potential damage that this ordnance would have on the incinerator itself. If these devices exploded inside the incinerator's chamber, it would be difficult to predict the results. One possible scenario is the release of partially destroyed contaminants into the environment. This coupled with the fact that the Asheville area is located in part of the country that experiences frequent air inversions, would increase the potential to exposing the community to these partially destroyed chemicals if a release, for any reason, occurred. And thirdly, a great number of citizens voiced a negative response towards on-site incineration both in the public meeting and during the public comment period.

This left the Agency with basically one other remedial alternative to address source control for these disposal areas that would adequately protect the public health and the environment and that was to place a cap over these disposal areas. It was not advisable to follow a no action alternative since the contaminants disposed of in the majority of these disposal areas are presently migrating with the groundwater from their disposal areas.

SARA also encourages the Agency to implement a remedial alternative that reduces the mobility, toxicity and volume of hazardous waste at a Superfund Site. The capping of the drum disposal areas along with the capping of the acid pit area and the soil fixation/stabilization/solidification process for disposal area 23 along with extracting and treating groundwater will meet these criteria. The security fences to be installed around these capped areas will help maintain the integrity of the caps by preventing unwanted intruders including man and animals alike, from damaging the cap.

In addition to the remedial activities stated above, a long term monitoring system will be instituted for the groundwater in both valleys and surface water. This monitoring system will provide data that will be used to indicate whether or not the remedial action implemented is working as designed.

As directed by the Chemtronics work plan the Agency developed for the Chemtronics Site and the Administrative Order of Consent signed by the Chemtronics, Inc. and Northrop Corporation and the Agency, in any off-site area that was identified with credible information would be investigate as past of the Remedial Investigation (RI). Since these off-site areas are not part of the "Chemtronics Site" as defined under the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), even if extensive contamination was found, these areas could not be addressed as part of the Chemtronics Site. For this reason, it was determined by the Agency to require only three soil borings into each identified area. All samples collected by the Agency were analyzed for the hazardous chemicals we normally look for in addition to analyzing for the compounds of BZ and CS. All borings made in the Buckeye/Walnut Cove landfill and the landfill adjacent to the Tropigas building penetrated the entire depth of the landfills and were terminated approximately five feet into the underlying soil.

The purpose of this initiative was not to provide sufficient data to determine how to remediate these areas but to see if these areas posed an immediate hazard to the community. The data generated during the RI indicates that these areas do not pose a hazard.

In their Health Assessment for the Chemtronics Site issued on March 21, 1988, the Agency for Toxic Substances and Disease Registry (ATSDR), recommended that residential wells be sampled and analyzed for volatile organics. This recommendation will be implemented. This is being performed only as a precautionary measure to ensure that the drinking water is not contaminated by any source. This testing of residential wells may be a one time occurrence or included in the long term groundwater monitoring program for the Site.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN
JKB 4/27/88	4/27/88	

Jon Bornholm Telex DISK CHEMTRONICS, FILE C104, 4/26/88

I. INTRODUCTION

This report is being submitted on behalf of Hoechst Celanese Corporation to provide comments on the Feasibility Study prepared for the remediation of the Chemtronics site in Swannanoa, North Carolina. The comments are based on review of the following documents:

- the Feasibility Study prepared by CRS Sirrine, dated December 1987;
- the fact sheet prepared by the EPA, Region IV, dated February 1988;
- the endangerment assessment prepared by CRS Sirrine, dated February 1988;
- comments prepared by the EPA and the North Carolina Department of Human Resources, transmitted in a letter from Jon K. Bornholm, EPA, Region IV to John F. Schultheis, Chemtronics, Inc., dated January 14, 1988; and
- a letter from Jon K. Bornholm, EPA, Region IV to Susan P. Engelman, Hoechst Celanese Corporation, dated February 3, 1988.

The comments provided herein are not intended to be a detailed critique of the Feasibility Study and the above-referenced documents. Rather, they are designed to address issues which we believe are of major importance to (1) the selection of a preferred remedy for the site, and (2) the manner in which such a remedy should be implemented. We have identified one major issue of concern which we believe has been addressed inappropriately or inadequately in the Feasibility Study: the development of ground water cleanup criteria for those chemicals with limited toxicological data. In addition, we have also presented comments on the adequacy of the

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characterization of contamination in the biolagoon area; the limited information on the system proposed for recovery and treatment of contaminated ground water; and the risks associated with the excavation of materials potentially containing explosives.

II. DEVELOPMENT OF GROUND WATER CLEANUP CRITERIA

A. Scope of Analysis

Appendix A of the Feasibility Study, "Development of Preliminary Pollutant Limit Values for Chemicals with Limited Toxicological Data" presents the derivation of cleanup levels for soil and ground water for explosives (RDX, TNT, and picric acid), BZ and its breakdown products (3-quinuclidinol, benzilic acid and benzophenone) and CS and its breakdown products (malononitrile and o-chlorobenzaldehyde). Since the proposed remedy for source control, i.e., fixation of the soils in DA-23 and capping of the other disposal units will essentially eliminate exposure via soil contact, our analysis has focused on the development of ground water cleanup criteria.

Our analysis examines those chemicals for which maximum concentrations measured in the ground water of the site currently exceed the calculated cleanup levels or preliminary pollutant limit values (PPLVs) in the Feasibility Study, i.e., benzilic acid, benzophenone, and RDX; and also those chemicals that may have been present in drummed wastes that could result in future ground water contamination, i.e., 3-quinuclidinol, malononitrile and o-chlorobenzaldehyde. BZ and CS were not evaluated for the following reasons: (1) the drummed BZ is believed to have been decontaminated and, therefore, degraded into 3-quinuclidinol, benzilic acid, and benzophenone (based on information gathered from employee interviews); and (2) CS has a half life in water of 41 minutes (Demek et. al. 1970) and would therefore not be expected to be stable in a ground water environment.

The toxicological basis for the ground water PPLVs mentioned above was reviewed using the reference material from a literature search of chemical/toxicological files in Dialog Information Systems. Based on this reference material, the PPLVs or cleanup criteria derived by ENVIRON differed from the values presented in Appendix A of the Feasibility Study for benzilic acid and RDX.

B. Evaluation of Data for Benzilic Acid and RDX

For benzilic acid, the only available toxicological data were three LD_{50} values:

- Oral LD_{50} of 2000 mg/kg for the mouse (NIOSH 1987);
- Subcutaneous LD_{50} of 1300 mg/kg for the mouse (NIOSH 1987), and
- Intravenous LD_{50} of 400 mg/kg for the rat (McNamara 1963).

The LD_{50} value that was chosen in Appendix A (Rosenblatt 1988) was the intravenous LD_{50} cited by McNamara (1963). However, since the exposure route through ground water is ingestion, it is more appropriate to choose the LD_{50} associated with the oral route of administration. A factor of 1.5×10^{-6} (Rosenblatt 1988) was then used to convert the oral LD_{50} (2000 mg/kg) to a chronic human acceptable daily intake (ADI) value:

$$\text{ADI} = (2000 \text{ mg/kg})(1.5 \times 10^{-6}) = 3 \times 10^{-3} \text{ mg/kg/day}$$

Using this calculated ADI and assuming that a 70 kg adult consumes 2 liters of water per day, the ground water PPLV is:

$$\text{Ground Water PPLV} = \frac{(3 \times 10^{-3} \text{ mg/kg/day})(70 \text{ kg body weight})}{2 \text{ liters/day}}$$

$$= .105 \text{ mg/l or } 105 \text{ ppb.}$$

The benzilic acid PPLV presented in Appendix A is 21 ppb. ENVIRON suggests that 105 ppb be used for benzilic acid instead of 21 ppb.

For RDX, the drinking water preliminary pollutant limit value of 35 ppb (Rosenblatt 1988) was based upon toxicity information from Dacre (1980) in which an acceptable daily intake (ADI) of 1 x 10^{-3} mg/kg/day was derived. The basis for this value was a subchronic (13 week) study in rhesus monkeys (Litton 1974) which identified a NOEL of 1 mg/kg/day; a safety factor of 1000 was used to derive the ADI (Rosenblatt, personal communication, March 25, 1988). We would endorse the use of this safety factor based on the following rationale: a factor of 10 for extrapolation from a subchronic to a chronic study, 10 for extrapolation from monkeys to humans, and 10 to account for interhuman variations in sensitivity.

A more recent chronic (2.5 year) feeding study (Levine et. al. 1983) has been conducted in Fischer 344 rats, which provided a NOEL of 0.3 mg/kg/day. (It is interesting to note that 0.3 mg/kg/day was also identified as a NOEL in a subchronic rat study conducted by Brown [1975].) Applying a safety factor of 100 to the NOEL (10 for extrapolation from rats to humans, and 10 to account for interhuman variations in sensitivity) results in an ADI of 3 x 10^{-3} mg/kg/day. This value has been proposed by the Oak Ridge National Laboratory (ORNL 1986) as the basis for an RDX water quality criterion for protection of human health. ENVIRON recommends using the 3 x 10^{-3} mg/kg/day as the ADI, because it is based upon a chronic study, in which the NOEL and LOEL were fairly close (0.3 and 1.5 mg/kg/day), as opposed to the subchronic study in which the NOEL and LOEL were separated by an order of magnitude (1 and 10 mg/kg/day). The NOEL from the Levine study also represents the lowest NOEL reported in the various RDX toxicity studies (ORNL 1986).

If it is assumed that a 70 kg adult consumes 2 liters of water per day, a water concentration of 105 ppb would correspond to the ADI of 3 x 10^{-3} mg/kg/day. ENVIRON suggests using 105 ppb, rather than 35 ppb, as the RDX limit value for drinking water.

III. OTHER ISSUES

The following section briefly presents comments on three issues pertaining to the Feasibility Study: the risks associated with excavation; the biolagoon failure; and the design of the ground water treatment and recovery system.

A. Risks Associated with Excavation

The comments provided by EPA make note of "the possible presence of explosives that could prove potentially dangerous to field workers" should a source control remedy involving excavation be used. The information presented in the Remedial Investigation (Metcalf & Eddy 1987) suggests the possible presence of explosives on-site. In addition, information provided by interviews with former employees has suggested the possibility of explosives in the fill of the disposal areas.

While we are not aware of any definitive way of confirming or disproving this possibility, short of actually carrying out the excavation work, we would suggest that this approach be avoided if ARARs for the site can be achieved by other remedies.

B. Biolagoon Failure

We endorse EPA's comment number 3 regarding the need for an expanded discussion of the biolagoon, the fate of the mixture that was released when the liner failed, and the significance of this occurrence. No analytical data are presented on the contaminants released from the biolagoon or on how such contamination might be remediated.

C. Design of the Ground Water Treatment and Recovery System

The Feasibility Study refers to the use of ground water recovery and treatment as a method of migration control. However, no explicit reference is made in the document to the design of the recovery system or to the volume of contaminated

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011-81-3-595-3850

March 31, 1988

VIA FEDERAL EXPRESS

Mr. Jon K. Bornholm
Site Project Manager
U.S. Environmental Protection Agency
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Re: Chemtronics, Inc. Site
Swannanoa, North Carolina

Dear Jon:

I am enclosing a report prepared on behalf of Hoechst Celanese Corporation by ENVIRON Corporation, which provides comments on the Feasibility Study for the Chemtronics site. I hope you will find these comments helpful.

Very truly yours,

David B. Hunter

David B. Hunter

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COMMENTS ON THE FEASIBILITY STUDY FOR THE CHEMTRONICS SITE, SWANNANOA, BUNCOMBE COUNTY, NORTH CAROLINA

Prepared for

Skadden, Arps, Slate, Meagher & Flom
Washington, DC

Prepared by

ENVIRON Corporation
Princeton, New Jersey

March 31, 1988

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ground water which it is expected to handle and treat. Furthermore, no approximation has been attempted for the time period over which the system is expected to have to operate to achieve a satisfactory level of cleanup. We believe that these considerations appropriately form part of the evaluation of technical feasibility, and should therefore be included in the Feasibility Study.

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MAY 0 3 1988

WD-SFB

Ms. Susan Engelman
Hoechst Celanese Corporation
Route 202-206 North
Somerville, NJ 08876

Dear Ms. Engelman:

This letter is in response to your correspondence the Agency received on March 31, 1988 during the public comment period on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

With respect to your concern of the groundwater clean-up criteria, it appears that the data ENVIRON used to calculate clean-up goals for benzilic acid and RDX became available after Sirrine performed their literature search. The information you presented in this correspondence is being reviewed by Region IV's Public Health Officer, Dr. Elmer Akin. I will follow his recommendation(s).

It is my understanding that there were several types of CS: CS, CS-1, and CS-2, produced at the Chemtronics facility with the latter species being more hydrophobic, thereby, extending its lifetime after coming into contact with water. We did not attempt to speciate the CS in our analyses, if it is even feasible, between the the types of CS. We found several hot spots within some of the disposal areas with high levels of CS. Since CS was found in the soil and exposed to water over the years from precipitation, one would expect that only the degradative products of CS would be found and not "live" CS. This is especially true if the expected half-life for CS is 41 minutes.

A groundwater sample collected during the October 1987 resampling episode for several of the monitor wells was analyzed for BCL-462. This sample was collected from monitor well SW-4 which is located downgradient of DA-23. BCL-462 is a brominated compound and is reportedly the only chemical in the biolagoon when the lagoon's liner disintegrate allowing the contents in the biolagoon to enter the ground. The information provided to the Agency was that one 55-gallon drum of BCL-462 distilled bottoms was introduced to a essentially filled 500,000 gallon lagoon that had been seeded with microorganisms RCRA is still looking at the Closure Plan submitted by Chemtronics, Inc.

The estimated volume of contaminated groundwater is incorporated into the revised draft FS. The volume is estimated to be 80 million gallons. It will not be possible to give an accurate estimate on the time required to clean the aquifer until after additional hydrogeological data is collected during the remedial design stage.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

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BORNHOLM	HANKE	GREEN
JKB 4/27/88	[illegible] 4/27/88	

Jon Bornholm Telex DISK CHEMTRONICS, FILE C110, 4/26/88

March 25, 1988

Jon Bornholm
Site Project Manager EPA
345 Courtland St. NE
Atlanta, GA 30365

Dear Mr. Bornholm,

I want to urge you to extend the comment period for the plans for the cleanup at Chemtronics in Swannanoa, NC. I feel that we do need to do a thorough cleanup operation there, and it is important that the EPA get on with the job. However, in view of the uncertainties surrounding the methodology's reliability, I believe that it would be prudent for the EPA to take its time to be certain that it is indeed cleaning up the contamination there and not just "spreading it around." It would not serve the best interests of the community to have the EPA remove the contaminents from the soil and then put them into the air. Poison is poison no matter which messenger brings its deadly power.

The extra time would permit a more complete and objective investigation of the dumping areas, a community-based health study, and more involvement of the local community in the process. Understandably, the community is very concerned and need as much information as possible so that they can interact in a creative and positive way.

Thank you for yourconsideration of this request.

Sincerely yours,

Ron Lambe

Ron Lambe
PO Box 18087
Asheville, NC 28814

cc: Clean Water Fund of NC
Rep. James M. Clarke
Sen. Terry Sanford
Sen. Jesse Helms

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APR 21 1988

WD-SFB

Mr. Ron Lambe
P.O. Box 18087
Asheville, NC 28814

Dear Mr. Lambe:

This letter is in response to your letter received by the Agency on March 28, 1988 with regards to comments on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Superfund Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community were selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

SARA also encourages the Agency to select permanent solutions for the clean-up at Superfund Sites. After the Agency reviewed all the remedial technologies identified in the draft Feasibility Study for addressing source control for the contaminants found in the disposal areas containing drums, the only remedial alternative that achieves this goal is incineration. Off-site incineration was eliminated from consideration because it was estimated that it would be more cost effective to incinerate these materials on-site.

Under ideal conditions with the incinerator working as it was designed, the only compounds that would be entering the environment from the incinerator would be the ash/soil residue from the burnt soils and water vapor and carbon dioxide out of the smoke stack. Therefore, virtually complete destruction of the contaminants would be achieved.

This remedial alternative was not selected for several reasons. First and foremost, is the threat posed by live ordnance buried along with the drums to the workers who would be involved in the excavation of these drums in order to prepare them for incineration. The second issue considered was the potential damage that this ordnance would have on the incinerator itself. If these devices exploded inside the incinerator's chamber, it would be difficult to predict the results. One possible scenario is the release of partially destroyed contaminants into the environment. This coupled with the fact that the Asheville area is located in part of the country that experiences frequent air inversions, would increase the potential to exposing the community to these partially destroyed chemicals if a release, for any reason, occurred. And thirdly, a great number of citizens voiced a negative response towards on-site incineration both in the public meeting and during the public comment period.

This left the Agency with basically one other remedial alternative to address source control for these disposal areas that would adequately protect the public and the environment and that was to place a cap over these disposal areas. It was not advisable to follow a no action alternative since the contaminants disposed of in the majority of these disposal areas are presently migrating with the groundwater from their disposal areas.

SARA also encourages the Agency to implement a remedial alternative that reduces the mobility, toxicity and volume of hazardous waste at a Superfund Site. The capping of the drum disposal areas along with the capping of the acid pit area and the soil fixation/stabilization/solidification process for disposal area 23 along with extracting and treating groundwater will meet these criteria. The security fences to be installed around these capped areas will help maintain the integrity of the caps by preventing unwanted intruders including man and animals alike, from damaging the cap.

In addition to the remedial activities stated above, the Site will have a long term monitoring system initiated for both the groundwater and surface water. This monitoring system will provide data that will indicate whether or not the remedial action implemented is working as designed.

With regard to your suggestion that the extra time during the extension of the public comment period would allow additional studies to be conducted, the Agency's stance is that sufficient data has already been generated to support the selection of the remedial alternative. And it is my understanding that North Carolina Department of Human Resources, Division of Health Services, Environmental Epidemiology Branch may look into the reported health issue.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

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ATLANTA, GA

March 14, 1988

Mr. Jon Bornholm
Site Project Manager
US EPA
345 Courtland Street, NE
Atlanta, GA 30365

Dear Mr. Bornholm,

I am writing this follow up letter to my question at the hearings at Owen High School on February 23, 1988 regarding the Superfund Cleanup of the Chemtronics property in Swannanoa, NC.

Let me repeat my comment that your study and report are very thorough, and you are to be congratulated on it. I was glad to know of cleanup procedures, of which I had not read in the general chemical literature. Let me clarify again my question about removal of the 600 drums for incineration at existing, licensed locations by Rollins, GTX, and others. Your studies have shown that leakage to date has been minimal and in no way life-threatening. My belief is that you probably do not need to incinerate all the soil, as you proposed. Just remove the drums and take them to an approved incinerator. The argument that drums of BZ must have Army protection during transport, and therefore cannot be moved, is not germane. Simply ask the Army to do it. It will be a good training exercise for the Chemical Corps! After the drums are gone, follow up on the studies by T. Kent Kirk of the Department of Agriculture's Forest Products Laboratory in Madison, Wisconsin as reported at the national meeting of the American Chemical Society in New Orleans last September. The results were described in "Chemical and Engineering News" September 14, 1987, page 17-19. Certain fungi can convert PAN, PCBs and other chlorinated aromatics to non-toxic dicarboxylic acids and further degradation products. This will purify the soil which has been contaminated to date and will, in the long run, avoid the necessity for the costly capping procedures. The area can then be reused, instead of being a capped wasteland.

A point which I did not bring up at the hearing, since you had asked that each questioner be limited to about five or six minutes, is this. I find it incredible that the option of "No Action" is retained as a viable solution to the problem. While it is true that no dire circumstances have developed in the fifteen to twenty years to date, you know very well that those drums will rust through in another five to ten years or less, releasing some 33,000 gallons of contaminants. At that point, the cleanup program will be infinitely more difficult than it is today. Let us get that option out of further consideration!

Since you work for the Environmental Protection Agency, I know that you have our best interests at heart. Let's remove the drums and then biologically purify the soil and get on with the work!

Many persons in the community,who were unable to attend the hearing, still need the opportunity to have the chance to evaluate the report and to write to you. The five week period that you have allowed for these letters and calls is much too short. You have had more than two years to make your analysis. We should be given at least two more months.

Thank you for your attention to this letter.

Yours truly,

Allen P. Arnold

Allen P. Arnold, Ph.D.
Adjunct Professor of Chemistry, UNCA

cc Congressman Jamie Clark
Dr. Dean Kahl, Chairman, Department of Chemistry Warren Wilson College
Laura Temple Haney, Department of Environment Warren Wilson College
Mr. Larry Pope, Executive Editor, Asheville Citizen-Times
Mr. Bob Clark, Swannanoa, NC
Mr. Allan Robertson, Chairman, Board of Trustees, Highland Farms
Mr. Chet Prentis, President, Highland Farms, Black Mountain, NC

MAY 0 3 1988

WD-SFB

Dr. Allen Arnold
44 Wagon Trail
Black Mountain, NC 28711-2533

Dear Dr. Arnold:

This correspondence is in response to your letter the Agency received on March 21, 1988 during the public comment period on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community was selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

SARA also encourages the Agency to select permanent solutions for the clean-up at Superfund Sites. After the Agency reviewed all the remedial technologies identified in the draft Feasibility Study for addressing source control for the contaminants found in the disposal areas containing drums, the only remedial alternative that achieves this goal is incineration. Off-site incineration was eliminated from consideration because it was estimated that it would be more cost effective to incinerate these materials on-site.

This remedial alternative was not selected for several reasons. First and foremost, is the threat posed by live ordnance buried along with the drums to the workers who would be involved in the excavation of these drums in order to prepare them for incineration. The second issue considered was the potential damage that this ordnance would have on the incinerator itself. If these devices exploded inside the incinerator's chamber, it would be difficult to predict the results. One possible scenario is the release of partially destroyed contaminants into the environment. This coupled with the fact that the Asheville area is located in part of the country that experiences frequent air inversions, would increase the potential to exposing the community to these partially destroyed chemicals if a release, for any reason, occurred. And thirdly, a great number of citizens voiced a negative response towards on-site incineration both in the public meeting and during the public comment period.

This left the Agency with basically one other remedial alternative to address source control for these disposal areas that would adequately protect the public health and the environment and that was to place a cap over these disposal areas. It was not advisable to follow a no action alternative since the contaminants disposed of in the majority of these disposal areas are presently migrating with the groundwater from their disposal areas.

SARA also encourages the Agency to implement a remedial alternative that reduces the mobility, toxicity and volume of hazardous waste at a Superfund Site. The capping of the drum disposal areas along with the capping of the acid pit area and the soil fixation/stabilization/solidification process for disposal area 23 along with extracting and treating groundwater will meet these criteria. The security fences to be installed around these capped areas will help maintain the integrity of the caps by preventing unwanted intruders including man and animals alike, from damaging the cap.

Your suggestion to employ microorganisms and/or fungi to help degradate the chlorinated aromatic compounds in the disposal areas warrants further investigation. Although you suggested removing the drums and then, I assume, seeding the soil with the appropriate microorganisms to help detoxify the remaining contaminants in the soil. The major concern with this approach, as identified above, is the presence of explosive devices in the disposal areas. Although the capping option does not remove the source, this remedial alternative does not preclude using the seeding of the soils with these microorganisms prior to placing the cap over these areas.

We are required by the National Contingency Plan (NCP) to consider a "No Action" alternative throughout the process. This provides a common baseline data base to compare each remedial alternative and the health risk associated with each alternative.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

4WD-SFB BORNHOLM JKB 4/27/88

4WD-SFB HANKE 4/21/88

4WD-SFB GREEN

Jon Bornholm Telex DISK CHEMTRONICS, FILE CR92, 4/26/88

March 20, 1988

Jon Bornholm, Site Project Mgr.
U S EPA
345 Cortland St. N E
Atlanta, GA 30365

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ATLANTA, GA.

The EPA has told us that Chemtronics site contains a dangerous mix of chemicals in the soil, yet Chemtronics is still blasting on the site. We request that you:

1. Leave the comment period open beyond April until Technical Assistance Grant money is made available as Congress ordered.
2. Do not consider on-site incineration due to homes, schools and reservoirs nearby; and
3. Tell Chemtronics to stop blasting until the site is clean. Thank you.

Hugh & Judy Ansley
P.O. Box 535
Black Mtn, N.C. 28711
Hugh Ansley Esq.

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ATLANTA, GA.

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MAY 0 3 1988

WD-SFB

Mr. & Mrs. Ansley
P.O. Box 535
Black Mountain, NC 28711

Dear Mr. & Mrs. Ansley:

This correspondence is in response to your letter the Agency received on March 23, 1988 during the public comment period on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community was selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

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In addition to the remedial activities stated above, a long term monitoring system will be instituted for the groundwater in both valleys and surface water. This monitoring system will provide data that will be used to indicate whether or not the remedial action implemented is working as designed.

With respect your concern about blasting at the Site, EPA does not have jurisdiction over this type of activity. It would be prudent, however, on Chemtronics part to ensure that following the installation of the extraction wells to remove the contaminated groundwater during the remedial action, that they take into account the effect, if any, the blasting could have on the geology and hydrogeology of the area. If the blasting alters the groundwater regime in this vicinity then they may be required to install additional extraction and monitor wells to accommodate the change.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN
JKB 4/27/88	4/28/88	

Dear Mr. Bornholm,

Regarding the Chemtronics Cleanup in the Swannanoa Valley near Asheville, North Carolina:

Please give more time for public comment on the EPA plan so that we who live in the valley can

1) have a better investigation of the entire area
2) secure an independent review of the EPA plan
3) start a health survey of residents in the Chemtronics area.

RECEIVED
MAR 23 1988
ERRB
EPA – REGION IV
ATLANTA, GA.

Thank you for your kind attention to this very serious matter.

Joan C. Kuyper
(Res: Warren Wilson Road
Swannanoa, NC)

Mail: P.O. Box 8286
Asheville, NC 28814

MAY 0 4 1988

WD-SFB

Ms. Joan Keuger
P.O. Box 8286
Asheville, NC 28814

Dear Ms. Keuger:

This correspondence is in response to your letter the Agency received on March 23, 1988 during the public comment period on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community was selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

SARA also encourages the Agency to select permanent solutions for the clean-up at Superfund Sites. After the Agency reviewed all the remedial technologies identified in the draft Feasibility Study for addressing source control for the contaminants found in the disposal areas containing drums, the only remedial alternative that achieves this goal is incineration. Off-site incineration was eliminated from consideration because it was estimated that it would be more cost effective to incinerate these materials on-site.

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In addition to the remedial activities stated above, a long term monitoring system will be instituted for the groundwater in both valleys and surface water. This monitoring system will provide data that will be used to indicate whether or not the remedial action implemented is working as designed.

The Remedial Investigation (RI) performed at the Chemtronics Site was equivalent, if not more thorough, than RIs conducted at other Superfund Sites. The primary purpose of the RI is to generate sufficient data to support the decisions made in the Feasibility Study. This was done at Chemtronics.

With regard to your suggestion that the extra time during the extension of the public comment period would allow additional studies to be conducted, the Agency's stance is that sufficient data has already been generated to support the selection of the remedial alternative. And it is my understanding that North Carolina Department of Human Resources, Division of Health Services, Environmental Epidemiology Branch may look into the reported health issue.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN
JKB 4/27/88		

Jon Bornholm Telex DISK CHEMTRONICS, FILE C106, 4/26/88

Highland Farms
Apt K 123
Black Mountain, N.C. 28711

March 21, 88

[illegible]

Jon Bornholm
Atlanta, GA

Dear Sir:

As a resident of Swannanoa Valley I ask for more time for public comment on the EPA plan so that we who live in the valley can

1 have a better investigation of on and off-site areas;

2 Get technical help for an independent review of the EPA plan;

3 Start a health survey of residents in the Chemtronics area.

Sincerely yours,

Margaret H. Anderson
(Mrs. Paul B.)

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MAR 23 1988
EPA – REGION IV
ATLANTA, GA.

Reproduced from best available copy.

MAY 0 3 1988
WD-SFB

Ms. Margret Anderson
Apt. K 123
Highlands Farms
Black Mountain, NC 28711

Dear Ms. Anderson:

This correspondence is in response to your letter the Agency received on March 23, 1988 during the public comment period on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community was selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

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Sincerely yours,

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Superfund Project Manager

4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN
JKB 4/27/88	4/28/88	

Jon Bornholm Telex DISK CHEMTRONICS, FILE C107, 4/26/88

1

Sunday

Dear Mr. Bornholm,

We who live in the Swannoa Valley are asking for more time for public comment on the EPA plan so that we who live in the valley can

1. have a better investigation of on and off-site areas;
2. get technical help for an independent review of the EPA plan; and
3. start a health survey of residents in the Chemtronics area.

Please we need a 2nd opinion on the EPA's proposed plan for the cleanup.

Thank you —

Sincerely,
Barbara B. Gaw
Box 544
Montreat, N.C.
28757

Ben E. Pusser (son)
Wendy J. Pusser (daughter)

ERRB
RECEIVED
MAR 23 1988
EPA — REGION IV
ATLANTA, GA.

MAY 0 3 1988

WD-SFB

Ms. Barbara Gaw
P.O. Box 544
Montreat, NC 28757

Dear Ms. Gaw:

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If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN
JKB 4/27/88		

Jon Bornholm Telex DISK CHEMTRONICS, FILE C108, 4/26/88

ROBERT W. CLARK
~~ATTORNEY~~
~~302 S. YORK STREET~~
~~GASTONIA, NORTH CAROLINA 28054~~
~~(704) 864-6516~~

ERRB
RECEIVED
MAR 23 1988
EPA – REGION IV
ATLANTA GA.

3 Lockhart Lane
Swannanoa, NC 28778

Re: Chemtronics

Dear Mr. Bornholm:

Please find enclosed numerous questions that many of my neighbors, and I, have regarding the Chemtronics situation. We have requested Congressman Clarke's assistance in obtaining answers from Washington and would like answers from your office where appropriate.

We urge first: Please extend the public comment period until we can apply for an utilize the technical assistance grant Congress ordered in 1986. Here it is March, 1988 and the rules may come out this week. It is fundamentally unfair to call for public comment while you fail to make the rules available for informed comment.

I also request that the issue of blasting on site be examined. That can only increase leakage.

Thank you for your review of the enclosed questions. I would appreciate responses to most when you have a chance. Yours,

Robert Cl

Questions for the EPA

1. In light of it taking 2 years to formulate the rules for technical assistance grant money, why won't the EPA expand the time for public commen until TAG money is available?

2. Re: Incineration

1. Under what conditions was the test burn do at Ogden Environmental Services?

Specifically:

a. Was prior warning given?
b. Who prepared the chemicals for burning?
c Was any dirt contaminated & then burne?
d. Was any air monitoring done during the tes
e. How many burns under how many weather conditions yielded the 99.9999% results?

2. Please explain how (why) portable incinerator are deemed satisfactory when the feasibility stud says the portable incinerator will be available i early 1988? (Test was done on fixed incinerator).

3. Why is no provision made for air monitoring during incineration? (Only provision for air monitoring is at job site while barrels/dirt are being dug) Why no off-site monitoring during excavation?

4. Where in the country have similar mixes of chemicals/dirt been burned so that we can contact residents of those areas?

3. Re: Groundwater

A. Why does it appear that the majority of the ten, off-site, tested wells are "upstrea from the site?

B. Why were only 3 "fingerprint" chemica (BZ, CS, explosive compound) tested? Based on the failure to test the water for the many known carcinogenic compounds found as deep as 30' und the Chemtronics site, HOW can it be concluded there has been no off-site migration?

C. Who (specific individuals) did the groundwater testing and what are their backgrounds related to knowledge of groundwater systems?

D. What, if any, fluctuations, temporary or permanent, are caused to groundwater levels w blasting is done on site? Has _1_ test been dc of groundwater reaction to the many underground blasts?

E. Specifically set out the groundwater monitoring mechanisms for post clean up re[illegible]ew

a. Where will test wells be located - any offsi

b. What will be tested for

c. Will local citizens be allowed to have Independent testing done and under what circumstances will civilians be allowed on-site to chec test wells?

d. How long will test wells be operated

4. Re: Current Chemtronics' Operations

A. What monitoring is being done of the current blasting procedures? If, as admitted, chemicals are leaching through the ground, how c blasting not cause further damage? (Note: near residents feel tremors from blasting)

B. What is Chemtronics burning at this ti have any necessary permits been issued and complied with

C. What monitoring of sewer discharge, if any, is being done? (Mr. Cochrane, a neighbor of plant, has tests showing the release of carcinoge of the same type found in the Chemtronics s[illegible]l onto his property from a sewer back up in 198

(Local Question)

D. Is the MSD aware of the discharges and still confident of the sludge incinerator's abi to safely burn?

E. What products are being produced at Chemtronics and who is monitoring disposal?

5. Celanese's failure to participate

A. Since it appears most of the BZ was ma under Celanese reign has Celanese assiste with knowledge of the chemicals involved and their disposition?

B. What, if any, reason has been given for the failure to participate?

C. Has the Army, who hired Celanese to ma BZ, cooperated and to what extent?

D. Is Celanese still bidding on military contracts

MAY 0 3 1988

WD-SFB

Mr. Robert Clark
3 Lockhart Lane
Swannanoa, NC 28778

Dear Mr. Clark:

This correspondence is in response to your letter the Agency received on March 23, 1988 during the public comment period on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

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In addition to the remedial activities stated above, a long term monitoring system will be instituted for the groundwater in both valleys and surface water. This monitoring system will provide data that will be used to indicate whether or not the remedial action implemented is working as designed.

A list of nearby private wells was generated with the help of North Carolina Department of Natural Resources and Community Development (NCDNRCD). From this list, ten wells were selected to be sampled as part of the RI. This list was revised during this task depending upon the well condition and whether or not the contractor could get access to the well. The fact that needs to be considered is the depth of these wells in comparison to the elevation of the Site and the disposal areas as well as other hydraulic barriers. Some of these wells may be upgradient of the Site.

The reason the samples collected from the private wells were only analyzed for the "fingerprint" chemicals during the Remedial Investigation (RI) was in an attempt to identify chemicals that could be traced directly back to the Chemtronics Site. Other chemicals, such as the volatile organics (VOs), are widely used by industry as well as homeowners. Therefore, if these contaminants were found in a private well, we would not be able to trace these chemicals directly back to Chemtronics. A recommendation made by the Agency for Toxic Substances and Disease Registry (ATSDR) in their Health Assessment for the Chemtronics Site dated March 21, 1988 was to sample residential wells for VOs as a precautionary measure. This would help ensure that the drinking water is not contaminated by any source. This will probably be implemented as part of the remedial action.

By reviewing the surface water/sediment and groundwater data, one can see that as you move away from the disposal areas, the concentration of contamination decreases to eventually reaching below detection levels. Below detection level means that the contaminant is there but at a level that cannot be analytically detected or the contaminant is not there in which case the level of contamination is zero.

When you ask about the groundwater testing, I am assuming you are referring to who performed the chemical analyses on the samples. All samples collected by the PRPs' contractor were sent to IT Laboratories located in Knoxville, Tennessee. EPA has a well established procedure of quality assurance/quality control (QA/QC) for labs used by PRPs. The prime goal of this QA/QC procedure is to verify the analytical results generated by the lab hired by the PRPs. The analytical data generated for the Chemtronics Site by the IT lab has been accepted by the Agency.

With respect your concern about the blasting issue, EPA does not have jurisdiction over this type of activity. It would be prudent, however, on Chemtronics part to ensure that following the installation of the extraction wells to remove contaminated groundwater during the remedial action, that they take into account the effect, if any, the blasting could have on the geology and hydrogeology of the area. If the blasting alters the groundwater regime in this vicinity then they may be required to install additional extraction and monitor wells to accommodate the change.

The existing groundwater monitoring will be reviewed for adequacy after the extraction wells are located. This will be done as part of the Remedial Design stage. More likely than not, all monitor wells will be located on-site as Tree Bee Creek acts as a groundwater divide. The schedule for sampling as well as what the samples will be analyzed for will also be designated in the design phase. I am assuming, however, that volatile organics as well as BZ and CS will be analyzed for in samples collected from these wells. A review of the RI analytical data will be used to make this determination. The monitoring can last up to 30 years and, if necessary, longer.

It is my understanding that the County or the State will sample a resident's well if they have reason to believe it is contaminated. In any event, in their Health Assessment for the Chemtronics Site issued on March 21, 1988, the Agency for Toxic Substances and Disease Registry (ATSDR), recommended that residential wells be sampled and analyzed for volatile organics. This recommendation will be implemented. This is being performed only as a precautionary measure to ensure that the drinking water is not contaminated by any source. This testing of residential wells may be a one time occurrence or included in the long term groundwater monitoring program for the Site.

It is my understanding with regards to burning activities on-site that Chemtronics, Inc. has the necessary permit(s) from the State or County. As for the sewer discharge, this falls under the jurisdiction of the Metropolitan Sewer District.

All disposal of hazardous constituents from industry since 1980 has been and will remain to be regulated by RCRA. Superfund is not interested in what Chemtronics, Inc. is not presently producing as a business. This information is not needed for Superfund program to accomplish our goal.

As for your question #5, all this information is contained in the information repository.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN
JKB 4/27/88	CWH 4/27/88	

Jon Bornholm Telex DISK CHEMTRONICS, FILE CR , 4/26/88

MAY 0 3 1988

WD-SFB

Dr. Wayne Montgomery, Vice Chairman
Buncombe County Board of Commissioners
Asheville City Hall
Asheville, NC 28805

Dear Dr. Montgomery:

This correspondence is in response to your letter the Agency received on April 19, 1988 after the public comment period on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site has been closed.

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community was selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

SARA also encourages the Agency to select permanent solutions for the clean-up at Superfund Sites. After the Agency reviewed all the remedial technologies identified in the draft Feasibility Study for addressing source control for the contaminants found in the disposal areas containing drums, the only remedial alternative that achieves this goal is incineration. Off-site incineration was eliminated from consideration because it was estimated that it would be more cost effective to incinerate these materials on-site.

Under ideal conditions with the incinerator working as designed, the only compounds that would be entering the environment from the incinerator would be the ash/soil residue from the burnt soils and water vapor and carbon dioxide out of the smoke stack. Therefore, virtually complete destruction of the contaminants would be achieved.

This remedial alternative was not selected for several reasons. First and foremost, is the threat posed by live ordnance buried along with the drums to the workers who would be involved in the excavation of these drums in order to prepare them for incineration. The second issue considered was the potential damage that this ordnance would have on the incinerator itself. If these devices exploded inside the incinerator's chamber, it would be difficult to predict the results. One possible scenario is the release of partially destroyed contaminants into the environment. This coupled with the fact that the Asheville area is located in part of the country that experiences frequent air inversions, would increase the potential to exposing the community to these partially destroyed chemicals if a release, for any reason, occurred. And thirdly, a great number of citizens voiced a negative response towards on-site incineration both in the public meeting and during the public comment period.

This left the Agency with basically one other remedial alternative to address source control for these disposal areas that would adequately protect the public health and the environment and that was to place a cap over these disposal areas. It was not advisable to follow a no action alternative since the contaminants disposed of in the majority of these disposal areas are presently migrating with the groundwater from their disposal areas.

SARA also encourages the Agency to implement a remedial alternative that reduces the mobility, toxicity and volume of hazardous waste at a Superfund Site. The capping of the drum disposal areas along with the capping of the acid pit area and the soil fixation/stabilization/solidification process for disposal area 23 along with extracting and treating groundwater will meet these criteria. The security fences to be installed around these capped areas will help maintain the integrity of the caps by preventing unwanted intruders including man and animals alike, from damaging the cap.

In addition to the remedial activities stated above, a long term monitoring system will be instituted for the groundwater in both valleys and surface water. This monitoring system will provide data that will be used to indicate whether or not the remedial action implemented is working as designed.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN
JKB 4/27/88	4/27/88	

Jon Bornholm Telex DISK CHEMTRONICS, FILE C[illegible], 4/26/88

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LA

United States Senate

March 30, 1988

Respectfully referred to:

Craig DeRemer
Director, Office of Congressional LIaison

B

Because of the desire of this office to be responsive to all inquiries and communications, your consideration of the attached is requested. Your findings and views, in duplicate form, along with return of the enclosure, will be appreciated by

Jesse Helms
U.S.S.

Form #2

Direct to the attention of:
Wayne Boyles
Office of Senator Jesse Helms
402 Dirksen Office Building
Washington, D.C. 20510
(202) 224-6342

RECEIVED
4/5/88

FROM
ONORABLE JESSE A. HELMS

CONTROL NO.
AL881466

UBJECT AND DATE
CHEMTRONICS SITE INVESTIGATION

DATE REC'D
4/8/88

DUE DATE
4/18/88

REFERRED (1)	WASTE / SFB	**(2)** Dick Green	**(3)**	**(4)**
DATE		4/11 HANKE		

REPLY SENT TO

DATE RELEASED

REMARKS

PREPARE REPLY FOR RA'S SIGNATURE. PLEASE FORWARD THRU CONGRESSIONAL AFFAIRS BEFORE & AFTER RA'S SIGNATURE.

ATTACH 3 WHITE CARBON COPIES IN ADDITION TO ANY OTHER COPIES REQUIRED. ATTACH NECESSARY ENVELOPES FOR MAILING.

ACKNOWLEDGED - DATE
☐

NO ANSWER NEEDED
☐ *(Explain in remarks)*

PA Form 5180-1 (6-72)
ACES FWPCA FORM 72 AND
-73 WHICH MAY NOT BE USED.

(Remove this copy only, do not separate remainder.)

MAIL CONTROL SCHEDULE

Bee Tree Community Development Club

Mrs. Marjorie G. Gash, President
Bee Tree Community Development Club
25 Summer Haven Road
Swannanoa, N.C. 28778

Mrs. Annie McMahon, President
Buckeye Cove Community Club
611 Christian Creek Road
Swannanoa, N.C. 28778

Attn Wayne

March 17, 1988

Mr. Jon Bornholm
Site Project Manager
U.S. EPA
345 Courtland Street, NE
Atlanta, Georgia, 30365

Dear Mr. Bornholm:

We are writing about the Chemtronics Site Investigation, the response period, the feasibility of a Technical Assistance grant, and public concern about EPA's proposals for the cleanup.

Because we represent Community Development Clubs, we want to give you some background information about the groups. Both clubs are incorporated as non-profit community clubs under N.C. statutes. We work with the Buncombe County Community Development Council, the Western North Carolina Development Association, and Agricultural Extension. We also are associated with Quality Forward and Beautification groups, and the N.C. Dept. of Transportation in Buncombe County. The Bee Tree Club includes all families on Bee Tree Road (from the Welcome sign to the dam), Long Branch, and Summer Haven Roads. The Buckeye Cove Club takes in Buckeye Cove Road, Old Buckeye Cove, West Buckeye Cove, Buckeye Access, Wilson Cove, Walnut Cove, Old Fellowship Road, Domeno Drive, and Ponderosa Drive (about 11 miles in all). The Buckeye Club represents about 215 families; Bee Tree has not taken a census but estimates that we have about 250 families in our club area.

People in these Community Clubs are very concerned about proposals for the Chemtronics cleanup. The Community Clubs wish to apply for a Technical Assistance Grant. We have several other comments.

First, the Swannanoa Valley people never asked for this problem of hazardous waste which has literally been dumped on us. There are people here who remember initial contacts made with landowners in the 1950s. The purposes and intent of the first company, Oerlikon Tool & Arms, was misrepresented to those landowners. Those people would never have sold their land if they had had any idea of the present outcome. It is important to make this point because you can't build trust on mistrust & lies.

Reproduced from best available copy.

Secondly, there are people in our communities: who feel that the remedia investigation is flawed. They feel that not all hazardous chemicals were tested for at some off-site areas, that there are omissions in the study, and that test wells were not drilled in areas that should have been tested. This is where an independent review of the remedial investigation could relieve much public concern and mistrust. The communities most directly impacted certainly have a right to know that the investigation was correct, sufficiently detailed, thorough, and accurately interpreted.

Third, we appreciate the two week time extension - until April Fool's Day. The additional time has been helpful, but we feel a further extension is essential. After all, the hazardous waste problem on that site has been developing for 30 years or more. It is presumptuous to expect an intelligent answer on all actions for a clean up from rural communities on such a thoroughly complex and technical undertaking within a 30 day period. It gives us a very unfair ratio, 24 hours to 365 days at best. Also, we hate to feel we are being taken on April Fool's Day.

Realistically, these rural communities would do well to even identify and contact the technical experts we need within thirty days--let alon come up with any answers. Furthermore, the Feasibility Study has real just become available, and there has been virtually no publicity on the grants for communities such as ours. The one announcement the writ heard about these grants was on public radio in December; it was just heard by chance and because the radio happened to be on.

While we wish to have an additional extension, we do not want to delay the cleanup any longer than necessary because of on-going leaching. We need the extension to enable us to apply for and receive one of the technical assistance grants which were mandated by Congress and which are available through your office. We understand that EPA has not yet released the guide lines for obtaining a grant (the writer heard they were to be available in early March). The fact that these guidelines for application will not be released until after the deadline on the public response period on the Chemtronics cleanup certainly presents a problem for us. Our communities need to be reassured by having our own team of independent experts review all data from the initial investigat through EPA's proposed cleanup.

Accordingly, our fourth point is that we would like to hear from you at your earliest convenience on how to go about applying for a technical assistance grant.

Fifth, many valley residents feel that the decision making processes of the investigation and cleanup are not sufficiently tied to community concerns. Related to this, we wish to state that the community attitud studies conducted by the Site Advisory Committee do not represent our communities; those studies are based on quota samples and cannot be use for generalizations about our communities. Any good social scientist will tell you that you need a representational sample for valid results

Some additional concerns that are expressed by valley residents are that continued blasting will cause more fissures in underlying rock and result in leaching at other unexplored areas; that too many explosives are stored on the site adjacent to a growing population, a that there are unidentified hazardous chemicals leaching into Bee Tree Creek and possibly the Owen Park Lake (where people fish). Furthermore, people are concerned about on-site inceneration and the lengthy period of time it would require. There is concern that once such a large incinerator is brought into the valley it would be a permanent fixture and burn forever. Even while writing this letter another concern prompted a neighbor to call to say that fumes from materials dumped into the sewer by chemtronics were rising through the water traps in her three basement drains; there is a bad odor from this gas and she doesn't know if it is harmful. She does not believe that Chemtronics is cooperating with the local people or with regulations on air pollution and other dumping.

An additional concern related to the treating of ground water under capped areas is two-fold. There should be a provision to supply water to people whose wells might be affected by downdrawing ground water. There has been no explanation given as to why Chemtronics could not use this "pure" water - it was estimated at 85 gallons per minute- in their manufacturing processes rather than dump it into Bee Tree Creek. It would certainly reassure the communities if they used this treated "pure" water rather than just discharge it into the creek.

Sixth, because these are rural communities, many people will express their concerns but will not take the time to write to the EPA. A few of these people are former employees who are afraid that their retirem checks will be cut off if they take any action such as speaking up or writing a letter. It is because we know that many concerned citizens will not write, we are using petitions and form letters to let you know that the people in the Swannanoa valley do care very much about the quality of life they will have in the future, they do care about the earth and the total environment, they do care about having the cleanup done properly and according to the best standards and latest technology, and they do care about being heard.

Sincerely yours,

Marjorie G. Gash + Annie McMa

Marjorie Gash & Annie McMahon

cc: The Honorable Jesse Helms
PO Box 2944, Hickory, N.C. 28603

The Honorable Terry Sanford
73 Federal Bldg., P.O. Box 2137
Asheville, N.C. 28802

Representative James McClure Clarke
434 Biltmore Bldg., 1 Pack Square
Asheville, N.C. 28801

Governor James Martin
Office of the Governor
Raleigh, N. C. 27603

APR 25 1988

4RA

The Honorable Jesse A. Helms
United States Senate
Washington, D.C. 20510

Dear Senator Helms:

This is in response to your inquiry of March 30, 1988 in which you referred a copy of a letter from the Bee Tree Community Development Club concerning the Chemtronics Superfund Site in Swannanoa, North Carolina which also was received by the Agency during the public comment period.

Enclosed is a copy of the Agency's response from Project Manager Mr. Jon Bornholm to this letter from the Bee Tree Community Development Club.

Please be assured that we are doing everything possible to insure a timely clean-up which will be protective of all aspects of human health and the environment.

If I may be of further assistance, please do not hesitate to contact me.

Sincerely yours,

/s/ Joseph R. Franzmathes
Acting
Greer C. Tidwell
Regional Administrator

Enclosure

Bornholm IBM DISK CHEMTRONICS, FILE #15-CONG, 4/19/88

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB	4WD	4PAB	4RA
BORNHOLM	HANKE	GREEN	STONEBRAKER	TOBIN	THOMPSON	TIDWELL
JHB 4/20/88	4/20/88	4/20/88	Stoney 4/21/88	P Tobin 4-21-88		

APR 21 1988

4WD-SFB

Mrs. Annie McMahon, President
Buckeye Cove Community Club
611 Christian Creek Road
Swannanoa, NC 28778

Dear Ms. McMahon:

This letter is in response to your letter received by the Agency on March 21, 1988 with regards to comments on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period of the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community were selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

The Agency is not discouraging you from applying for a TAG but please be advised that the Record of Decision (ROD) for the Chemtronics Site was signed April 5, 1988. The ROD is the decision document in which the Agency states the remedial action to be implemented at a Superfund Site. If a TAG is applied for and awarded now, the grant the community receives would be spent on reviewing the remedial design. I have passed your request on to Ms. Pat Zweig who is in charge of overseeing the TAG program in Region IV. Any future correspondence with regards to TAGs should be directed to her attention. Her telephone number is (404)347-2643.

Please be advised that the Site Advisory Committee is a committee devised by the Potential Responsible Parties' (PRPs) for conducting community relations activities and is not the Agency's committee. The majority of the information the Agency disseminated to the public was through either fact sheets or public meetings. The Agency has also established three information repositories were all pertinent documents pertaining to the Chemtronics Site are located.

As for the additional concerns expressed by the valley residents, EPA has no jurisdiction over either the storage or detonation of explosives on-site. It would be prudent, however, on Chemtronics, Inc. part to ensure that followingthe installation of the groundwater extraction wells during the remedial action stage, that the company take into account the effect, if any, the blasting could have on the geology and hydrogeology underlying the Site. If the blasting alters the groundwater regime of the area then they will be required to install additional extraction and monitor wells to accommodate the change.

Your comment concerning Chemtronics, Inc. using the treated groundwater as their source for production water is a good idea and I will pass this idea on to the consultant hired to design the remedial action. The one immediate drawback to this approach I see is the need for Chemtronics to build a containment structure to hold the treated water when there is little or no demand for the treated water. The cost of constructing this holding facility versus the cost of obtaining a NPDES permit to discharge the treated water to a surface stream or the monthly expense of discharging to the sewer system needs to be compared. Since each if these three alternatives are equivalent in terms of treatment and discharge, the most cost effective alternative would probably be implemented.

The Agency appreciates your comments and if I can be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

IBM DISK CHEMTRONICS CR, FILE CR13, 4/20/88

4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN
JKB		
4/20/88	4/20/88	4/20/88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

4WD-SFB

Mrs. Majorie Gash, President
Bee Tree Community Development Club
25 Summer Haven Road
Swannanoa, NC 28778

Dear Ms. Gash:

This letter is in response to your letter received by the Agency on March 21, 1988 with regards to comments on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period of the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community were selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

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The Agency appreciates your comments and if I can be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

7 881695

United States Senate

R4
AA Clerk
RJ
SW
[illegible]
FA

April 18, 1988

Respectfully referred to:

⑥

Craig DeRemer
Director, Office of Congressional Liaison
Equal Employment Opportunity Commission

Because of the desire of this office to be responsive to all inquiries and communications, your consideration of the attached is requested. Your findings and views, in duplicate form, along with return of the enclosure, will be appreciated by

Jesse Helms
U.S.S.

Direct to the attention of:
Wayne Boyles
Office of Senator Jesse Helms
402 Dirksen Office Building
Washington, D.C. 20510
(202) 224-6342

Form #2

RECEIVED
4/20/88

FROM HONORABLE JESSE A. HELMS			CONTROL NO. AL881695
SUBJECT AND DATE CLEANUP/CHEMTRONICS SUPERFUND SITE			DATE REC'D 4/26/88
			DUE DATE 5/2/88
REFERRED (1) WASTE	(2) SFB	(3) Dick Green	(4) HANKE/BORNHOLM
DATE	4/27/88	4/27	
REPLY SENT TO			DATE RELEASED
REMARKS PREPARE REPLY FOR RA'S SIGNATURE. PLEASE FORWARD THRU CONGRESSIONAL AFFAIRS BEFORE & AFTER RA'S SIGNATURE. ATTACH 3 WHITE CARBON COPIES IN ADDITION TO ANY OTHER COPIES REQUIRED. ATTACH NECESSARY ENVELOPES FOR MAILING.			ACKNOWLEDGED - DATE ☐ NO ANSWER NEEDED ☐ *(Explain in remarks)*

ERRB/RAS
RECEIVED
APR 27 1988
EPA - REGION IV
ATLANTA, GA

EPA Form 5180-1 (6-72)
REPLACES FWPCA FORM 72 AND HEW-73 WHICH MAY NOT BE USED.

(Remove this copy only, do not separate remainder.)

MAIL CONTROL SCHEDULE

APR 29 1988

4RA

The Honorable Jesse A. Helms
United States Senate
Washington, D.C. 20510

Dear Senator Helms:

This is in response to your inquiry of April 18, 1988 in which you referred a copy of a letter from Ms. Millie Buchanan concerning the Chemtronics Superfund Site in Swannanoa, North Carolina which also was received by the Agency during the public comment period.

Enclosed is a copy of the Agency's response from Project Manager Mr. Jon Bornholm to this letter from Ms. Millie Buchanan.

Please be assured that we are doing everything possible to insure a timely clean-up which will be protective of all aspects of human health and the environment.

If I may be of further assistance, please do not hesitate to contact me.

Sincerely yours,
/s/ Lee A. DeHihns, III
Deputy Regional Administrator

Greer C. Tidwell
Regional Administrator

Enclosure

Bornholm IBM DISK CHEMTRONICS, FILE 1-CONG, 4/27/88

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB	4WD	4PAB	4RA
BORNHOLM	HANKE	GREEN	STONEBRAKER	TOBIN	THOMPSON	TIDWELL
JKB 4/27/88	[illegible] 4/27/88	RBG 4/28/88	RDS 4/29/88	P Tobin 4-28-88		

Clean Water Fund
Of North Carolina

138 E. Chestnut St.
Asheville, NC 28801

1988 MAR 30 AM 10:05

March 25, 1988

Senator Jesse Helms
403 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Helms:

Your constituents in the Swannanoa community need your help. The Environmental Protection Agency is now deciding on the cleanup technology and standards for the Chemtronics Superfund site in their community. Under the ground at Chemtronics are a mixture of chemicals, dumped there over a period of decades by several industries. The mix includes the warfare agents BZ (a hallucinogen) and CS (a nerve gas), and an unknown amount of still-active explosive materials, as well as the more usual mix of organics and metals found at most hazardous waste sites.

The reauthorization of Superfund in October 1986 mandated that communities have access to Technical Assistance Grants to hire their own consultants to help them understand the cleanup options and have a part in decisions that will directly affect their health and their environment. Despite that mandate 17 months ago, it was not until this week that EPA issued guidelines for applying for the grants (Federal Register, March 24). The neighbors of Chemtronics plan to apply for the grants so they can understand the process and help in making the tough decisions necessary, but the public comment period is now scheduled to end April 1. Obviously, the community must have more time.

Please use your influence on behalf of the Swannanoa community to urge EPA to extend the comment period and delay decisions on cleanup options until residents have access to technical assistance and time to take advantage of it.

Thank you for any help you can provide.

Sincerely,

Millie Buchanan

Millie Buchanan
Director, WNC Office

Clean Water Fund
Of North Carolina

138 E. Chestnut St.
Asheville, NC 28801
March 25, 1988

Mr. Jon K. Bornholm
Site Project Manager
U.S. EPA Region IV
345 Courtland Street NE
Atlanta, GA 30365

Dear Mr. Bornholm:

Thank you for extending the public comment period on the Chemtronics Draft Feasibility Study until April 1. As you heard during the February 23 meeting, community residents want to become meaningfully involved in cleanup decisions, but feel that to this point they have been excluded. The prompt response of EPA to their request for an extension was, I hope, the first step in a process that can lead to cleanup decisions that everyone can feel good about.

The second step was taken Monday night by the Chemtronics Site Advisory Board, when it acknowledged the need for community input into its decisions by scheduling its own meeting April 11 to hear community concerns. That board, which was to serve as the bridge between the company and the community, has in fact had minimal contact with the neighbors who will be most immediately affected by the quality of the cleanup.

The issuance March 24 of the Interim Final Regulations for Technical Assistance Grants opens further the door of opportunity for true, informed community involvement. I understand you have already received a letter from the Bee Tree and Buckeye Cove Community Development Clubs expressing interest in applying for technical assistance money, and other neighbors concerned about cleanup decisions have expressed support for their proposal. However, in order to take advantage of the grants, the community will obviously need more time than the current April 1 deadline allows.

The Clean Water Fund of North Carolina supports community requests for a further extension of the public comment period, and a delay of any decision on cleanup options. The opportunity of a Superfund community to get its own expertise is mandated by the Superfund Amendments and Reauthorization Act. That opportunity is also essential if residents are to perceive that the cleanup options chosen are the ones most appropriate for and protective of the community.

Our organization has already obtained a promise of a preliminary review pro bono by a scientist familiar with Superfund cleanups, but the April 1 deadline does not allow time for an adequate review, given his other commitments. Since the TAG regulations are now available, this review can serve as an outline for more complete analysis should the community obtain a grant. We therefore request that the comment period be extended until at least 60 days following the receipt of a Technical Assistance Grant for the community. Sixty days is a tight schedule for hiring consultants, obtaining a technical review, and making comments based on that review; however, we are cognizant of the need for remediation to begin without undue delay to avoid further potential for offsite leaching.

In addition, we reiterate here the points raised in Clean Water Fund comments on the Remedial Investigation (dated April 10, 1987). Particularly, we shared then the concerns of EPA's own reviewers about the sufficiency of testing and investigation to support cleanup decisions, and those concerns are still valid. They were addressed by changing the wording in the final RI report to indicate that conclusions are based on incomplete information, but the issue of what additional testing needs to be done remains. We question the adequacy of the investigation of offsite dumps and the minimal sampling of nearby private wells.

In addition, we object strongly to the continued proposal to use standards less protective of human health than the Maximum Contaminant Level Goals mandated by SARA Section 121 (d)(2)(A). Standards for evaluating air and water quality during the cleanup also need to be addressed, particularly if the chosen options include incineration and/or air stripping.

The SARA mandate for permanent cleanup options also points to the need for solutions beyond the capping proposal being considered for much of the site. Any material left onsite now due to lack of an appropriate treatment method should not only be thoroughly monitored for the lifetime of any hazard it poses to the community or the environment, but also reevaluated periodically in light of new technology. Any consent order should include provisions for treatment at a later date should appropriate permanent remedies be available.

Lastly, I have heard several residents comment favorably on your personal willingness to respond to their calls. That type of responsiveness will help considerably as hard decisions must be made during the next few months, and I thank you for it.

Sincerely,

Millie Buchanan

Millie Buchanan
Director, Western NC Office

cc: Congressman James McClure Clarke
Senator Terry Sanford
✓Senator Jesse Helms

APR 2 1 1988

WD-SFB

Ms. Millie Buchanan
Clean Water Fund
138 E. Chestnut St.
Asheville, NC 28801

Dear Ms. Buchanan:

This letter is in response to your letter the Agency received on March 28, 1988 with regards to comments on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. The community's desire for the public comment period to be extended two months past the date the community receives the Technical Assistance Grant (TAG) was brought to the attention of Mr. Lee DeHihns, Acting Regional Administrator. It was his decision to let stand the April 1, 1988 closing date for the public comment period. His decision was based on the appraisal that even if the community was selected for such a grant, we estimated that it would take approximately eight months to a year for the Agency to make the award and for you to procure a consultant and review the report the consultant develops. The Agency, however, is mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989 and any untimely delays will impede the Agency's attempt to achieve this goal.

SARA also encourages the Agency to select permanent solutions for the clean-up at Superfund Sites. After the Agency reviewed all the remedial technologies identified in the draft Feasibility Study for addressing source control for the contaminants found in the disposal areas containing drums, the only remedial alternative that achieves this goal is incineration. Off-site incineration was eliminated from consideration because it was estimated that it would be more cost effective to incinerate these materials on-site.

Under ideal conditions with the incinerator working as it was designed, the only compounds that would be entering the environment from the incinerator would be the ash/soil residue from the burnt soils and water vapor and carbon dioxide out of the smoke stack. Therefore, virtually complete destruction of the contaminants would be achieved.

This remedial alternative was not selected for several reasons. First and foremost, is the threat posed by live ordnance buried along with the drums to the workers who would be involved in the excavation of these drums in order to prepare them for incineration. The second issue considered was the potential damage that this ordnance would have on the incinerator itself. If these devices exploded inside the incinerator's chamber, it would be difficult to predict the results. One possible scenario is the release of partially destroyed contaminants into the environment. This coupled with the fact that the Asheville area is located in part of the country that experiences frequent air inversions, would increase the potential to exposing the community to these partially destroyed chemicals if a release, for any reason, occurred. And thirdly, a great number of citizens voiced a negative response towards on-site incineration both in the public meeting and during the public comment period.

This left the Agency with basically one other remedial alternative to address source control for these disposal areas that would adequately protect the public and the environment and that was to place a cap over these disposal areas. It was not advisable to follow a no action alternative since the contaminants disposed of in the majority of these disposal areas are presently migrating with the groundwater from their disposal areas.

SARA also encourages the Agency to implement a remedial alternative that reduces the mobility, toxicity and volume of hazardous waste at a Superfund Site. The capping of the drum disposal areas along with the capping of the acid pit area and the soil fixation/stabilization/solidification process for disposal area 23 along with extracting and treating groundwater will meet these criteria. The security fences to be installed around these capped areas will help maintain the integrity of the caps by preventing unwanted intruders including man and animals alike, from damaging the cap.

In addition to the remedial activities stated above, a long term monitoring program will be instituted for both the groundwater and surface water. This monitoring system will provide data that will be used to indicate whether or not the remedial action implemented is working as designed.

As required by SARA, the remedy identified above will meet all applicable or relevant and appropriate requirements (ARARs) that have been promulgated and enforceable. With respect to the second paragraph of the second page, it was never stated by EPA that there was insufficient testing/data to support cleanup decisions. What was stated by the Agency in the referenced document, the RI report, is that there was insufficient data to support some of the conclusions made by the authors. These conclusions were subsequently modified in reiterations of the RI to acknowledge this fact.

If I can of be of further help, please do not hesitate to contact me at (404)347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

MEMORANDUM

DATE: MAY 03 1988

SUBJECT: Response to the Letter Mr. J. Patrick Price Sent to Lee Thomas Regarding the Chemtronics Superfund Site

TO: Patrick M. Tobin, Director
Waste Management Division

FROM: Jon Bornholm, Superfund Project Manager

THRU: Al Hanke, Chief
NC/SC Site Management Unit

Richard Green, Chief
North Site Management Section

Richard D. Stonebraker, Chief
Superfund Branch

The attached letter is in response to the April 1, 1988 letter Mr. J. Patrick Price, Chairman of the Chemtronics Site Community Advisory Board (CSCAB), addressed to Mr. Lee M. Thomas, EPA Administrator. The membership of the CSCAB is supposedly comprised of individuals with various backgrounds including citizens, community interest groups, public officials, and economic interest groups from the Asheville/Swannanoa area. These individuals were initially invited by the PRPs to join and form the Board. Since then, it has been the Board's responsibility to maintain its membership which, from my understanding, has been a difficult task due to the relative high rate of turnover. The formation of the CSCAB was a task included in the Community Relations Plan (CRP) developed by the PRPs for the Chemtronics Superfund Site located in Swannanoa, North Carolina. The purpose of the Board, as defined in the PRPs CRP, is to act as a sounding board for the community's concerns and issues.

In addition to the formation of the CSCAB, the PRPs CRP also called for the establishment of their own information repository which is referred to as the Chemtronics Site Information Bureau (CSIB). The CSIB and CSCAB work together in releasing information to the public. Unf[illegible] some of the information they have released is tainted to paint a rosier picture of the Site than that which actually exists. The community is very sensitive to this issue.

Reproduced from best available copy.

The CSCAB has compounded some of the situations that Mr. Price has highlighted in his letter by conveying to the community at large that the CSCAB is EPA's direct link to the community. This misnomer was brought to my attention through a recent telephone conversation I had with a professor from a local college. The main reason the professor called was to ask me if EPA had sanctioned the CSCAB and the information it and the CSIB was disseminating. My response was no. Below are two quotes taken from letters from several community leaders in the Swannanoa area received during the public comment period. The first quote is from the presidents of the Bee Tree Community Development Club and the Buckeye Cove Community Club. They state "...we wish to state that the community attitude studies conducted by the Site Advisory Committee do not represent our communities; those studies are based on quota samples and cannot be used for generalization about our communities...". The second quote is from the comments submitted by the North Carolina Clean Water Fund representative where she is referring to the desire of the local residents to become meaningfully involved in the cleanup decision. She states "The second step was taken by the Chemtronics Site Advisory Board, when it acknowledged the need for community input into its decisions by scheduling its own meeting April 11 to hear community concerns. That Board, which was to serve as the bridge between the company and the community, has in fact, had minimal contact with the neighbors who will be most immediately affected by the quality of the cleanup...". These two quotes clearly indicate that the CSCAB does not have as clear a handle on the situation as Mr. Price makes it appear in his letter. It should also be noted that none of the comments received by the Agency during the public comment period either praised or commended the CSCAB for it's community representation efforts. As identified above, several individuals question the CSCAB's motives.

The majority of the community's mistrust stems from the fact that the PRPs and their contractor have conducted the RI/FS. This mistrust surfaced back in 1985 when the Agency first held some informal public meetings during the development of the Chemtronics work plan. At this time, the public was informed that the PRPs may be performing the work themselves. The general feeling of the individuals who attended these meetings was that the Agency was going to let the fox guard the hen house. Ever since then the Agency has had to expend extra effort to help substantiate credibility for the work performed by the PRPs at the Chemtronics Site.

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN	STONEBRAKER
JKG 4/29/88	4/29/88	RBG 4/29/88	RDS 4/29/88

IBM DISK - CHEMTRONICS CR, FILE # CR17A, 4/28/88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 303[illegible]

MAY 3 1988

4WD

Mr. J. Patrick Price, Chairman
Chemtronics Site Community Advisory Board
P.O. Box 18177
Asheville, NC 28814

Dear Mr. Price:

I would like to take this opportunity to respond to your April 1, 1988 letter addressed to Mr. Lee Thomas, EPA Administrator, regarding the Agency's community relations activities in the Asheville/Swannanoa area in conjunction with the Chemtronics Superfund Site.

The Agency has a very difficult task when it comes to addressing a community's concerns associated with a Superfund site. First, the Agency is placed in an awkward position first to explain why industry was allowed to dispose of chemicals in the manner that the Chemtronics potentially responsible parties did and second, to explain what is the health risk posed by the disposed materials. It is easy to say "that was the accepted method of disposal back then" but this does very little to reduce the fears of the community. One of the greatest fears a community has associated with a Superfund Site is the risk or potential risk that the Site poses toward a local citizen's health. It is difficult to explain the health risk or potential health risk associated with a site in terms of numbers. One of the most common risk factors used is 10^{-6} or one in one million. First of all, one million is a large number making it difficult for people to visualize and secondly, this risk factor becomes nearly impossible to accept if you are one of the residents living adjacent to the site and that one in a million could be you or a member of your family. In these instances, any risk factor greater than zero is too high. EPA is very sensitive to these and other issues associated with Superfund sites.

In reviewing the history of the Chemtronics facility, dating back to its inception as an industrial plant, a fact was revealed which has compounded the community relations problems for both the Agency as well as for the PRPs. Apparently, the community had absolutely no idea that either BZ or CS was being manufactured at the Site until EPA made it public knowledge during the development of the Remedial Investigation/Feasibility Study work plan. This fact alone generated a significant amount of news media interest in the Chemtronics Site. Since these compounds were manufactured specifically for the U. S. Government (i.e., the Department of Defense), the Agency is even more sensitive to this issue.

It is difficult for EPA to disseminate the massive amounts of information generated from activities conducted at a Superfund project. The task becomes even more complicated when you consider the diverse backgrounds of the residents living in the Asheville/Swannanoa area. It is difficult to relate very technical issues and/or concepts to the community at large. In an attempt to accomplish this goal, the information on the technical issues and considerations were drawn out with sufficient verbiage as to provide everybody an opportunity to understand them. This approach, unfortunately, has a drawback which you alluded to in your letter and that is it makes it difficult to get to the "meat" of the situation. But given the complexity of the Chemtronics Site, it was inevitable that a certain percentage of the community would not be able to assimilate all the information reviewed during the February 28, 1988 public meeting.

This confusion is compounded by the fact that each newspaper that services the Asheville/Swannanoa area has published their own understanding of the problems associated with the Site and what the actual remedial cleanup would entail and accomplish. This occurred even after the Agency had disseminated this information to the news media in Fact Sheets.

Region IV has conducted significantly more community relations activities at the Chemtronics Site than are generally performed at other Superfund sites. From the tone of your letter it appears that this was not enough. At the same time, I am troubled why you did not state these questions/concerns you alluded to in the Chemtronics Site Community Advisory Board March 28, 1988 letter the Agency received during the public comment period. Without receiving these specific questions/concerns from the community, it is difficult for the Agency to respond to the community.

In the near future, the Agency will respond to the majority of correspondence we received during the public comment period. Over eighty percent of the comments we received requested a delay in the issuance of the Record of Decision until two months after the community received a Technical Assistance Grant. Unfortunately, the Agency could not honor this request. It was our appraisal that this would result in an eight month to one year delay in the project which was deemed unacceptable for implementing cleanup activities at the Site.

If I can be of further assistance, please do not hesitate to contact me.

Sincerely yours,

Patrick M Tobin

Patrick M. Tobin
Waste Mana [illegible] on Director

April 1, 1988

Mr. Lee M. Thomas
Administrator
United States Environmental Protection Agency
Room W1200
401 M Street SW
Washington, DC 20460

Dear Mr. Thomas:

In a recent meeting of the Chemtronics Site Community Advisory Board, a very serious problem emerged. It is a problem which has tremendous impact on every decision and action related to the Site. Simply stated, EPA has not effectively communicated with the Community and the public.

The CSCAB has and is supplied with all pertinent information relating to the RI/FS, most of which has been read by or reviewed for the members. In addition, the Board has been advised and counselled by Sirrine Environmental Consultants and the PRP's. Even with this constant flow of information, there are numerous unanswered questions in the minds of the members regarding the EPA's remedial alternatives.

If the Board, with its myriad of resources, still has questions, imagine how many more questions remain unanswered in the minds of the community who has been exposed to a fraction of that information.

Under the Community Relations Program, implemented by the Chemtronics Site Information Bureau and Visual Imagry, an incredible volume of information has been disseminated to the public and the media: Newsletters, press briefings, public meetings, media releases, fact sheets, background sheets, technical papers, videotapes, slide films and other documents have been employed. This entire program has been funded by the PRP's. In addition, the EPA has been and is provided with all of the resources of the Community Relations Program.

It is the consensus of the CSCAP that the weak link in gaining the confidence and trust of the public regarding the FS is the EPA. The individuals and audio visual techniques used at both public meetings were very weak and almost amateurish. Presenters failed to deal with the "meat" of the recommendations in a credible manner. There was little supporting material that would help the audience understand these highly complex subjects. The only supplemental material supplied to the public was that created and supplied by the Chemtronics Site Information Bureau.

Beyond the public meetings, there has been virtually no communication between the EPA and the community or region. According to independent research conducted in the Fall of 1987, the EPA has a very low credibility with the community. We believe the reason is evident.

It is the EPA which will issue the ROD, the final decision on what remedial actions will be taken. If the EPA lacks credibility, every finding, every recommendation, and all involved parties will also lack credibility. Without it, there will never be peace of mind in the community.

The Board feels that PRP's and their contractors have done a very reliable and credible job on the RI/FS. Now it is critical that the public understand the validity of the findings and the reliability of the recommendations. This can be accomplished only with a very intensive, cooperative community information program mounted by the EPA. We are assured by the PRP's that the full resources of the Chemtronics Site Information Bureau are available for those purposes.

We look forward to your evaluation.

Sincerely,

J. Patrick Price

J. Patrick Price, Chairman
Chemtronics Site Community Advisory Board

JAMES McCLURE CLARKE
11TH DISTRICT, NORTH CAROLINA

COMMITTEE ON INTERIOR AND
INSULAR AFFAIRS

COMMITTEE ON
FOREIGN AFFAIRS

SELECT COMMITTEE ON
AGING

7

Congreſs of the United States
House of Representatives
Washington, DC 20515

217 Cannon House Office Building
Washington, DC 20515
(202) 225-6401

One North Pack Square
Suite 434
Asheville, NC 28801
(704) 254-1747

301 West Main Street
Spindale, NC 28160
(704) 286-4890

319 West Main Street
Sylva, NC 28779
(704) 586-6631

March 30, 1988

R7
A
RJ
SW
C
RH

Mr. Jon Bornholm
Remedial Project Manager
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Dear Mr. Bornholm:

After reviewing the situation related to the cleanup of the Chemtronics Superfund site in Swannanoa, North Carolina, we would like to request the Environmental Protection Agency (EPA) to delay issuing a Record of Decision on this project until the local community has had the opportunity to apply for Technical Assistance Grant monies and utilize them if approved. Residents in the area of the site feel the need to obtain an independent evaluation of cleanup options and would like to commission a consultant of their choice to review the situation and make recommendations regarding cleanup technologies.

Congress recognized the need for providing assistance to communities for the purpose of interpreting technical information related to the cleanup of Superfund sites when it enacted the Superfund Amendments and Reauthorization Act of 1986. We are pleased that the EPA has now published the regulations regarding Technical Assistance Grants enabling communities to begin applying for these funds. We strongly recommend that residents of the Swannanoa area be permitted sufficient time to apply for the funds, and utilize them if approved, so they may be fully involved in the decision-making process and feel confident about the technologies selected for the cleanup of this site.

Thank you for your consideration and attention in this matter.

Sincerely,

Jamie Clarke
James McClure Clarke
U.S. House of Representatives

Terry Sanford
Terry Sanford
U.S. Senate

cc: ✓Mr. Lee M. Thomas
Administrator
U.S. EPA

Mr. Lee A. Dehihns, III
Acting Regional Administrator
U.S. EPA - Region IV

RECEIVED
4/12/88

FROM HONORABLE JAMES MCCLURE CLARKE			CONTROL NO. AL881588
SUBJECT AND DATE CLEANUP/CHEMTRONICS SUPERF[illegible]			DATE REC'D 4/20/88
			DUE DATE 4/25/88
REFERRED (1) WASTE	(2) SFB	(3) Dick Green	(4)
DATE	4/21/88	4	
REPLY SENT TO			DATE RELEASED
REMARKS PREPARE REPLY FOR RA'S SIGNATURE. PLEASE FORWARD THRU CONGRESSIONAL AFFAIRS BEFORE & AFTER RA'S SIGNATURE. ATTACH 3 WHITE CARBON COPIES IN ADDITION TO ANY OTHER COPIES REQUIRED. ATTACH NECESSARY ENVELOPES FOR MAILING			ACKNOWLEDGED - DATE ☐ NO ANSWER NEEDED ☐ *(Explain in remarks)*

ERRB/RAS
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APR 2[illegible] 1988
EPA - REGION IV
ATLANTA, GA

EPA Form 5180-1 (6-72)
REPLACES FWPCA FORM 72 AND HEW-73 WHICH MAY NOT BE USED.

(Remove this copy only, do not separate remainder.)

MAIL CONTROL SCHEDULE

APR 29 1988

4RA

Honorable James M. Clarke
House of Representatives
Washington, D.C. 20515

Dear Mr. Clarke:

This is in response to your March 30, 1988 letter concerning the Chemtronics Superfund Site in Swannanoa, North Carolina. The original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Site was to expire on March 18, 1988. At the request of the citizens at the public meeting, the comment period was extended to April 1, 1988. It has recently been brought to my attention by Mr. Jon Bornholm, the Project Manager, that both you and the concerned citizens living in the vicinity of the Chemtronics Site would like an additional extension to the public comment period.

The draft Feasibility Study and the proposed remedial action were presented to the public in a meeting conducted by Mr. Bornholm on behalf of the Agency on February 23, 1988. In that meeting, the community was encouraged to contact the Agency with their thoughts/comments/questions regarding the information disseminated at the public meeting. The draft Feasibility Study was made available at the meeting and copies are currently available at the four information repositories.

Approximately 340 letters from local residents have been received by the Agency since the February 23 public meeting. The Agency is aware of the interest, concern and commitment shown by the residents of Swannanoa and surrounding communities in protecting their environment. More than 80 percent of those who wrote, including a petition with over 830 names, have requested that the Agency consider an additional extension of the public comment period beyond the April 1 closing date. The majority of these people are asking that the comment period be extended for several months after the community receives a Technical Assistance Grant (TAG). Although we are sympathetic to the community's desire, the Agency intends to deny their request for the following reason. If the community were selected for such a grant, it is our estimate that it will take approximately eight months to a year for the Agency to make the award and for the community to procure a consultant and review the report the consultant develops. The Agency is, however, mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989. Untimely delays will impede our efforts to achieve this goal. The Agency is not discouraging the Swannanoa community from applying for a TAG. However, the TAG will not be issued prior to the Record of Decision. If the community does receive TAG monies, it can be directed toward the review of the remedial design that will be developed for the cleanup of the Site.

Please be assured that we are doing everything possible to insure a timely clean-up which will be protective of all aspects of human health and the environment.

If I may be of further assistance, please do not hesitate to contact me.

Sincerely yours,

/s/ Lee A. DeHihns, III
Deputy Regional Administrator

Greer C. Tidwell
Regional Administrator

Bornholm/Richer IBM DISK, FILE 3-CONG, 4/27/88

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB	4WD	4PAB	4RA
BORNHOLM	HANKE	GREEN	STONEBRAKER	TOBIN	THOMPSON	TIDWELL
JKB 4/27/88	dmk 4/27/88	RG 4/28/88	RGG 4/28/88	P Tobin 4-28-88		

APR 29 1988

4RA

The Honorable Terry Sanford
United States Senate
Washington, D.C. 20510

Dear Senator Sanford:

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Please be assured that we are doing everything possible to insure a timely clean-up which will be protective of all aspects of human health and the environment.

If I may be of further assistance, please do not hesitate to contact me.

Sincerely yours,

/s/ Lee A. DeHihns, III
Deputy Regional Administrator
Greer C. Tidwell
Regional Administrator

Bornholm/Richer IBM DISK, FILE 2-cong, 4/27/88

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB	4WD	4PAB	4RA
BORNHOLM	HANKE	GREEN	STONEBRAKER	TOBIN	THOMPSON	TIDWELL
JKB 4/27/88	4/28/88	RDG 4/28/88	4/28/88	P Tobin 4-28-88		

Price, J. Patrick -	CONTROL NO. AX 880684
BJECT AND DATE 4/1/88 Comments - EPA Pub Part Chemtronic Site, NC	DATE REC'D 4-14 DUE DATE ~~4-25~~ 5-3

FERRED (1)	(2)	(3)	(4)
Mr. Tobin SFB	Dick Green		
4-14 ATE			

PLY SENT TO	DATE RELEASED
EMARKS Please prepare a reply for Mr. Tobin's signature. MAGNAFAX A COPY OF REPLY TO GERRY GUGGEMOS, A-101, Phone 382-4063. If any extension is needed, call Penny Poeppelman x3004.	ACKNOWLEDGED - DATE ☐ NO ANSWER NEEDED ☐ *(Explain in remarks)*

5180-1 (6-72)
EP FWPCA FORM 72 AND
EW-73 WHICH MAY NOT BE USED.

(Remove this copy only, do not separate remainder.)

MAIL CONTROL SCHEDULE

April 1, 1988

Mr. Lee M. Thomas
Administrator
United States Environmental Protection Agency
Room W1200
401 M Street SW
Washington, DC 20460

Dear Mr. Thomas:

In a recent meeting of the Chemtronics Site Community Advisory Board, a very serious problem emerged. It is a problem which has tremendous impact on every decision and action related to the Site. Simply stated, EPA has not effectively communicated with the Community and the public.

The CSCAB has and is supplied with all pertinent information relating to the RI/FS, most of which has been read by or reviewed for the members. In addition, the Board has been advised and counselled by Sirrine Environmental Consultants and the PRP's. Even with this constant flow of information, there are numerous unanswered questions in the minds of the members regarding the EPA's remedial alternatives.

If the Board, with its myriad of resources, still has questions, imagine how many more questions remain unanswered in the minds of the community who has been exposed to a fraction of that information.

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We look forward to your evaluation.

Sincerely,

J. Patrick Price

J. Patrick Price, Chairman
Chemtronics Site Community Advisory Board

MAY 3 1988

4WD

Mr. J. Patrick Price, Chairman
Chemtronics Site Community Advisory Board
P.O. Box 18177
Asheville, NC 28814

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This confusion is compounded by the fact that each newspaper that services the Asheville/Swannanoa area has published their own understanding of the problems associated with the Site and what the actual remedial cleanup would entail and accomplish. This occurred even after the Agency had disseminated this information to the news media in Fact Sheets.

Region IV has conducted significantly more community relations activities at the Chemtronics Site than are generally performed at other Superfund sites. From the tone of your letter it appears that this was not enough. At the same time, I am troubled why you did not state these questions/concerns you alluded to in the Chemtronics Site Community Advisory Board March 28, 1988 letter the Agency received during the public comment period. Without receiving these specific questions/concerns from the community, it is difficult for the Agency to respond to the community.

In the near future, the Agency will respond to the majority of correspondence we received during the public comment period. Over eighty percent of the comments we received requested a delay in the issuance of the Record of Decision until two months after the community received a Technical Assistance Grant. Unfortunately, the Agency could not honor this request. It was our appraisal that this would result in an eight month to one year delay in the project which was deemed unacceptable for implementing cleanup activities at the Site.

If I can be of further assistance, please do not hesitate to contact me.

Sincerely yours,

/s/ Patrick M. Tobin

Patrick M. Tobin
Waste Management Division Director

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB	4WD
BORNHOLM	HANKE	GREEN	STONEBRAKER	TOBIN
JKB 4/29/88	4/29/88	4/29/88	4/29/88	

IBM DISK-CHEMTRONICS CR, FILE #CR17, 4/28/88

MEMORANDUM

DATE:

SUBJECT: Response to the Letter Mr. J. Patrick Price Sent to Lee Thomas Regarding the Chemtronics Superfund Site

TO: Patrick M. Tobin, Director
Waste Management Division

FROM: Jon Bornholm, Superfund Project Manager

THRU: Al Hanke, Chief
NC/SC Site Management Unit

Richard Green, Chief
North Site Management Section

Richard D. Stonebraker, Chief
Superfund Branch

The attached letter is in response to the April 1, 1988 letter Mr. J. Patrick Price, Chairman of the Chemtronics Site Community Advisory Board (CSCAB), addressed to Mr. Lee M. Thomas, EPA Administrator. The membership of the CSCAB is supposedly comprised of individuals with various backgrounds including citizens, community interest groups, public officials, and economic interest groups from the Asheville/Swannanoa area. These individuals were initially invited by the PRPs to join and form the Board. Since then, it has been the Board's responsibility to maintain its membership which, from my understanding, has been a difficult task due to the relative high rate of turnover. The formation of the CSCAB was a task included in the Community Relations Plan (CRP) developed by the PRPs for the Chemtronics Superfund Site located in Swannanoa, North Carolina. The purpose of the Board, as defined in the PRPs CRP, is to act as a sounding board for the community's concerns and issues.

In addition to the formation of the CSCAB, the PRPs CRP also called for the establishment of their own information repository which is referred to as the Chemtronics Site Information Bureau (CSIB). The CSIB and CSCAB work together in releasing information to the public. Unfortunately, some of the information they have released is tainted to paint a rosier picture of the Site than that which actually exists. The community is very sensitive to this issue.

The CSCAB has compounded some of the situations that Mr. Price has highlighted in his letter by conveying to the community at large that the CSCAB is EPA's direct link to the community. This misnomer was brought to my attention through a recent telephone conversation I had with a professor from a local college. The main reason the professor called was to ask me if EPA had sanctioned the CSCAB and the information it and the CSIB was disseminating. My response was no. Below are two quotes taken from letters from several community leaders in the Swannanoa area received during the public comment period. The first quote is from the presidents of the Bee Tree Community Development Club and the Buckeye Cove Community Club. They state "...we wish to state that the community attitude studies conducted by the Site Advisory Committee do not represent our communities; those studies are based on quota samples and cannot be used for generalization about our communities...". The second quote is from the comments submitted by the North Carolina Clean Water Fund representative where she is referring to the desire of the local residents to become meaningfully involved in the cleanup decision. She states "The second step was taken by the Chemtronics Site Advisory Board, when it acknowledged the need for community input into its decisions by scheduling its own meeting April 11 to hear community concerns. That Board, which was to serve as the bridge between the company and the community, has in fact, had minimal contact with the neighbors who will be most immediately affected by the quality of the cleanup...". These two quotes clearly indicate that the CSCAB does not have as clear a handle on the situation as Mr. Price makes it appear in his letter. It should also be noted that none of the comments received by the Agency during the public comment period either praised or commended the CSCAB for it's community representation efforts. As identified above, several individuals question the CSCAB's motives.

The majority of the community's mistrust stems from the fact that the PRPs and their contractor have conducted the RI/FS. This mistrust surfaced back in 1985 when the Agency first held some informal public meetings during the development of the Chemtronics work plan. At this time, the public was informed that the PRPs may be performing the work themselves. The general feeling of the individuals who attended these meetings was that the Agency was going to let the fox guard the hen house. Ever since then the Agency has had to expend extra effort to help substantiate credibility for the work performed by the PRPs at the Chemtronics Site.

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB
BORNHOLM	HANKE	GREEN	STONEBRAKER
JKG 4/29/88	4/29/88	RAG 4/29/88	RDS 4/29/88

IBM DISK - CHEMTRONICS CR, FILE # CR17A, 4/28/88

S 881488

United States Senate

April 5, 1988

PJ
KC
SL
JL
[illegible]
KL

Respectfully referred to:

Craig DeRemer
Environmental Protection Agency

B

Because of the desire of this office to be responsive to all inquiries and communications, your consideration of the attached is requested. Your findings and views, in duplicate form, along with return of the enclosure, will be appreciated by

Jesse Helms
U.S.S.

Form #2

Direct to the [redacted] of:
Wayne Boyles
Office of Senator Jesse Helms
402 Dirksen Office Building
Washington, D.C. 20510
(202) 224-6342

RECEIVED
4/6/88

FROM HONORABLE JESSE A. HELMS	CONTROL NO. AL881488
SUBJECT AND DATE CHEMTRONICS SITE/SWANNANOA	DATE REC'D 4/8/88 DUE DATE 4/18/88

REFERRED (1) WASTE / SFB	(2) Dick Green	(3)	(4)
DATE	HANKE 4/11		

REPLY SENT TO	DATE RELEASED
REMARKS PREPARE REPLY FOR RA'S SIGNATURE. PLEASE FORWARD THRU CONGRESSIONAL AFFAIRS BEFORE & AFTER RA'S SIGNATURE. ATTACH 3 WHITE CARBON COPIES IN ADDITION TO ANY OTHER COPIES REQUIRED. ATTACH NECESSARY ENVELOPES FOR MAILING.	ACKNOWLEDGED - DATE ☐ NO ANSWER NEEDED ☐ *(Explain in remarks)*

EPA Form 5180-1 (6-72)
REPLACES FWPCA FORM 72 AND
NEW-73 WHICH MAY NOT BE USED.

(Remove this copy only, do not separate remainder.)

MAIL CONTROL SCHEDULE

W.L. Lovelace
540 Old Bee Tree Road
Swannanoa, NC 28778

1988 MAR 22 PM 4: 15

March 16, 1988

The Honorable Jesse Helms
Senate Office Building
Washington, D.C. 20510

Dear Senator Helms:

As you probably know, the EPA has placed the Chemtronics site in Swannanoa on the Superfund List and the final report before clean-up is now at hand. It is fairly obvious to those of us who live nearby, and have first-hand knowledge of the problem that they do not intend to clean up the problem as the R.F.I.S. indicated it should be handled.

Attached please find a copy of my letter to the EPA. I would be most grateful if you could get involved in this. Unfortunately none of the local government officials seem to care—only one bothered to attend the public hearing.

Please advise me how you can help me and your friends in the Swannanoa Valley. The R.O.D. ends April 1. We need it extended.

Very Sincerely,

W. L. Lovelace

WLL/aeh

Enclosure

W.L. Lovelace
540 Old Bee Tree Road
Swannanoa NC 28778

March 16, 1988

Mr. Jon K. Bornholm
Emergency and Remedial Response Branch
Remedial Action Section
345 Courtland Street, N.E.
Atlanta, GA 30365

Dear Mr. Bornholm:

I have had a chance to go over the final Chemtronics report, and I am quite amazed at the difference between it and the R.I.F.S. by Camp, Dresser, and McKee. For instance, the ground water contamination problem which they say is not off the site. I'm attaching two reports that dispute that fact. Camp, Dresser, and McKee say that the wells weren't drilled low enough to reach the aquifier, and I believe they are right. They also say that the waste stream could be diverted by geological faults. As much as they blast at Chemtronics, the earth is full of cracks way down. That's why the well at Owen Manufacturing Company, which is 600 feet deep, shows trichloroethlene. It's fairly obvious where it came from. Several years ago, Mr. Schultheis showed me some slides of magnetic readings showing two plumes that definitely were off the Chemtronics property.

I disagree with the capping of the acid pits. Over 550 thousand gallons of spent acid went into those pits from 1974-1979, all of which is no longer in that vicinity now. Downgrade from there, the dead vegetation bears that out. It has definitely moved.

I strongly protest incineration only 900 feet from my home and the homes of two of my sons. Chemtronics claims that they could burn BZ and get 99.999% burn when the material hasn't even been bench tested correctly. This is pure speculation and false promises on their part. Only six of the twenty commercial hazardous waste incinerators being used by the EPA are able to meet your guidelines, and only three of your 56 approved landfills totally conform to EPA policy. I do not want to be a part of an experimental malfunction that very well might take the very lives of every one in this valley. Chemtronics and their predecessors have a poor record in handling waste, as proved by the testimony of many former employees and by me myself. I have observed it since 1971; I have lived beside it since 1977.

APR 25 1988

4RA

The Honorable Jesse A. Helms
United States Senate
Washington, D.C. 20510

Dear Senator Helms:

This is in response to your inquiry of March 30, 1988 in which you referred a copy of a letter from Mr. W. L. Lovelace concerning the Chemtronics Superfund Site in Swannanoa, North Carolina which also was received by the Agency during the public comment period.

Enclosed is a copy of the Agency's response from Project Manager Mr. Jon Bornholm to this letter from Mr. W. L. Lovelace.

Please be assured that we are doing everything possible to insure a timely clean-up which will be protective of all aspects of human health and the environment.

If I may be of further assistance, please do not hesitate to contact me.

Sincerely yours,

/s/ Joseph R. Franzmathes
Acting
Greer C. Tidwell
Regional Administrator

Enclosure

Bornholm IBM DISK CHEMTRONICS, FILE #15-CONG, 4/19/88

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB	4WD	4PAB	4RA
BORNHOLM	HANKE	GREEN	STONEBRAKER	TOBIN	THOMPSON	TIDWELL
JKB 4/20/88	4/20/88	4/20/88	4/21/88	PTobin 4-21-88		

I do not feel that fencing in any portion of it would suffice. Wildlife would still have access to the property by flying in or climbing over. I am asking for a moratorium or a rejection of the final report on Chemtronics until we can get the government money that's available for us--once some guidelines are given us.

"Wallpapering" over the problem may hide a multitude of mistakes, but it by no means corrects the problem. I shall fight it to the bitter end.

Sincerely yours,

W. L. Lovelace

WLL/aeh

Enclosures 2

cc Jesse Helms, Terry Sanford, James McClure Clark

APR 2 5 1988

4RA

The Honorable Jesse A. Helms
United States Senate
Washington, D.C. 20510

Dear Senator Helms:

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Greer C. Tidwell
Regional Administrator

Enclosure

Bornholm IBM DISK CHEMTRONICS, FILE #15-CONG, 4/19/88

4WD-SFB	4WD-SFB	4WD-SFB	4WD-SFB	4WD	4PAB	4RA
BORNHOLM	HANKE	GREEN	STONEBRAKER	TOBIN	THOMPSON	TIDWELL
JKB 4/20/88	4/20/88	4/20/88	4/21/88	P Tobin 4-21-88		

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

4WD-SFB

Mr. W.L. Lovelace
540 Old Bee Tree Road
Swannanoa, N,C. 28778

Dear Mr. Lovelace:

This letter is in response to your letter received by the Agency on March 21, 1988 with respect to comments on the draft Feasibility Study and the proposed remedial alternative for the Chemtronics Superfund Site.

According to the data generated in the investigation of the groundwater during the Remedial Investigation (i.e., the migration of contaminants through the aquifer from the various disposal area), the contaminants have migrated between 400 to 800 feet downgradient from those disposal areas where groundwater contamination was found. Groundwater monitor wells were installed in locations the Agency thought would provide the best information regarding the movement of contaminants through the groundwater. These monitor wells were located where major fractures in the bedrock were thought to exist. These major fractures are where you would expect to find contamination. All wells were installed to a proper depth.

At no time has the Agency's contractor Camp, Dresser and McKee, Inc. issued a statement that the wells were not installed deep enough to intercept the aquifer. All wells were completed in the groundwater whether they were shallow wells or deep wells.

Neither the analytical data you received for the surface water sample collected near your residence nor the referenced analytical data on the water quality of the Owens Manufacturing Company's wells dispute the conclusion stated in the Remedial Investigation report that on-site groundwater contamination has not migrated off the Site. The stream sample you had collected near your house is located upstream of the Chemtronics property and the disposal areas. I would expect that the source of the tetrachloroethylene found in this sample is located upstream of your house (i.e., the little area off of Old Bee Tree Road where local residents appear to be using as a dump along the banks of Bee Tree Creek). North Carolina Department of National Resources and Community Development has already, to a certain degree of confidence, identified the source of the trichloroethene showing up in the Owens Manufacturing Company's production wells. The Chemtronics Site was not identified as the source.

The map Mr. Schultheis showed you identifying two contaminated groundwater plumes do exist but as stated previously the plumes have not nor will they within 25 years, reach the site's boundaries. One plume is emanating from the Acid Pit Area and the second from Disposal Area #23. Neither plume has migrated over 800 feet.

The Agency has selected the alternative for capping the drum containing disposal areas for several reasons. First and foremost, is the treat posed by live ordinance buried along with the drums to the workers who would be involved in the excavation of these drums in order to prepare them for incineration. The second issue considered was the potential damage that these ordinance would have on the incinerator itself. If these devices exploded inside the incinerator's chamber, it would be difficult to predict the results. One possible scenario is the release of partially destroyed contaminants into the environment. This coupled with the fact that the Asheville area is located in part of the country that experiences frequent air inversions would increase the potential to exposing the community to these partially destroyed chemicals if a release, for any reason, occurred. And thirdly, a great number of citizens voiced a negative response towards on-site incineration both in the public meeting and during the public comment period.

The Superfund Amendments and Reauthorization Act of 1986 (SARA) encourages the Agency to implement a remedial alternative that reduces the mobility, toxicity and volume of hazarious waste at a Superfund Site. The capping of the drum disposal areas along with the capping of acid pit area and the soil fixation/stabilization/solidification process for Disposal Area #23 along with extraction and treatment of groundwater will meet these criteria. The security fences to be installed around these capped areas will help maintain the integrity of the caps by preventing unwanted, intruders including man and animals alike, from damaging the cap.

In addition to the remedial activities stated above, a long term monitoring system will be instituted for the groundwater in both valleys and the surface water. This monitoring system will provide data that will indicate whether or not the remedial action implemented is working as designed.

If I can be of further help, please do not hesitate to contact me at (404) 347-7791.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

APR 27 1988

4WD-SFB

Mr. Buchanan
144 Anderson Branch
Marshall, North Carolina 28753

Dear Mr. Buchanan:

As you know, the original public comment period on the draft Feasibility Study and EPA's proposed remedial action at the Chemtronics Superfund Site expired on March 18, 1988. Later, the comment period was extended to April 1, 1988. It has been brought to my attention by Mr. Jon Bornholm, the Project Manager, that you and other concerned citizens living in the vicinity of the Chemtronics Site would like an additional extension to the public comment period.

The draft Feasibility Study and the proposed remedial action were presented to you at a public meeting conducted by Mr. Bornholm on behalf of the Agency on February 23, 1988. In that meeting, you were encouraged to contact the Agency with your thoughts/comments/questions regarding what you heard at the public meeting and after you had reviewed the draft Feasibility Study. The Study was made available at the meeting and copies are currently available at the four information repositories.

Approximately 340 letters have been received by the Agency since the February 23 public meeting. I am gratified by the interest, concern and commitment shown by the residents of Swannanoa and surrounding communities in protecting their environment. More than 80 percent of those who wrote, including a petition with over 830 names, have requested that the Agency consider an additional extension of the public comment period beyond the April 1 closing date. The majority of these people are asking that the comment period be extended for several months after the community receives a Technical Assistance Grant (TAG). Although I understand your point of view and am sympathetic, I must make you aware of my position. Even if the community were selected for such a grant, we estimate it will take approximately eight months to a year for us to make the award and for you to procure a consultant and review the report the consultant develops. The Agency is, however, mandated by Congress in the Superfund Amendments and Reauthorization Act of 1986 (SARA) to have cleanup activities underway at 175 Superfund Sites by October 1989. Untimely delays will impede our attempt to achieve this goal. Remember, you still have an opportunity in the near future to review and comment on the actual remedial design developed for the Site.

After it is developed, the Agency will hold another public meeting to present the design. Since the design is a more technically oriented document than either the Remedial Investigation document or the Feasibility Study, it may be more beneficial to the community to spend the TAG monies for a third party review at that time. This will give all concerned groups in the Swannanoa and Black Mountain area an opportunity to organize themselves into a single entity, become incorporated under applicable state laws, and provide 35 percent of the total cost of the TAG project (matching funds), all of which are necessary in order to receive a TAG.

After careful consideration of the situation at Chemtronics, I am going to let stand the April 1, 1988 closing date for the public comment period on the Feasibility Study and proposed remedial action for the Chemtronics Site. I again encourage you to organize yourselves into an incorporated entity and apply for a TAG in sufficient time to be able to procure technical assistance to review the remedial design.

Sincerely yours,

Lee A. DeHihns III, for
Greer C. Tidwell
Regional Administrator

APPENDIX B

COMMUNITY RELATIONS ACTIVITIES CONDUCTED AT THE CHEMTRONICS SITE

APPENDIX B

COMMUNITY RELATIONS ACTIVITIES
CONDUCTED AT THE CHEMTRONICS SITE

The following is a chronological listing of community relations activities performed with respect to the Chemtronics Site.

- In February 1984, EPA attended an annual environmental studies seminar conducted by Warren Wilson College. The Chemtronics Site was used as a case study.

- In November 1984, EPA participated in a series of three meetings held to address community concerns with the Chemtronics Site. The three meetings held were with 1) the Buncombe County Hazardous Waste Advisory Board, 2) the administration and faculty of the college and 3) a group of local citizens and college students.

- In March 1985, EPA released a Fact Sheet describing the history of the Site and the RI/FS process. It also contained a glossary.

- In October 1985, EPA released a second Fact Sheet that described the history of the site, the current status, the RI/FS process and provided the location of the four information repositories.

- In June 1986, EPA released a third Fact Sheet that described past events and the current status at the Site.

- In October 1986, EPA approved the first audio-visual presentation that describes the chronological history of the Site and the objectives of the RI/FS process. This audio-visual presentation was shown to various community groups and organizations.

- In March 1987, EPA helped in presenting the findings of the RI to the public in a meeting held at Swannanoa Elementary School.

- In September 1987, EPA released a Fact Sheet that described the findings and conclusions of the RI report.

- In September 1987, EPA approved the second audio-visual presentation that describes the RI/FS process and the RI findings with regard to the Chemtronics Site. This audio-visual presentation was also shown to various community groups and organizations.

- In February 1988, EPA released a Fact Sheet that described the findings and conclusions of the FS report and the Agency's proposed remedial alternative for the Site.

- In February 1988, EPA conducted a meeting in which the results of the FS were summarized and the Agency's preferred remedial alternative was presented for comment. It was stated at the meeting that the public comment period was to end March 18, 1988.

APPENDIX C

PUBLIC NOTICES/NEWSPAPER ARTICLES

United States
Environmental Protection
Agency

Region 4
Office of Public Affairs
345 Courtland Street, NE
Atlanta, GA 30365

Alabama
Florida
Georgia
Kentucky

Mississippi
North Carolina
South Carolina
Tennessee

EPA Environmental News

(404) 881-3004

H. Michael Henderson
(404) 347 - 3004

PRESS ADVISORY

ATLANTA, GEORGIA - The U. S. Environmental Protection Agency, Region IV (EPA) will hold a public informational meeting on Tuesday, February 23, 1988, 7 p. m., at the Charles D. Owens High School Auditorium on Old Black Mountain Highway, Buncombe County, North Carolina.

The purpose of the meeting is to discuss the findings of the Feasibility Study and to inform the community of other EPA activities at the Chemtronics, Inc. Superfund Site. The meeting will conclude with a question and answer period designed to answer citizen concerns. A three-week public comment period on the remedial alternatives suggested in the study begins February 23rd. The comment period will end on Friday, March 18, 1988. Written comments should be sent to Jon Bornholm, Remedial Project Manager, USEPA - Region IV, 345 Courtland Street, N. E., Atlanta, Georgia 30365.

- MORE -

ERRB
RECEIVED
FEB 17 1988
EPA – REGION IV
ATLANTA, GA.

Documents relating to EPA activities at the Chemtronics site are available for citizen review at the Warren Wilson College Library, 701 Warren Wilson College Road in Swannanoa, NC, the Buncombe County Office of Emergency Medical Services, 8 New Leicester Highway, Asheville, NC, and the University of North Carolina at Asheville, Ramsey Library, One University Heights, Asheville, NC.

The Chemtronics Superfund site encompasses approximately 1,027 acres along Old Bee Tree Road in the rural Swannanoa Valley of eastern Buncombe County of North Carolina and was placed on EPA's Superfund National Priorities List in December, 1982.

###

U.S. Environmental Protection Agency

Chemtronics Superfund Site

PUBLIC INFORMATION MEETING

TUESDAY, FEBRUARY 23, 1988

at 7:00 p.m.

in the

CHARLES D. OWEN HIGH SCHOOL AUDITORIUM

Old Black Mountian Highway
Swannanoa, North Carolina

The purpose of the meeting is to present the findings of the Feasibility Study and EPA's proposed plan to remedy contamination at the Chemtronics Superfund Site, located in Swannanoa. The meeting will also provide interested citizens the opportunity to express concerns and ask questions regarding EPA's involvement at the site.

A question and answer period will follow a presentation by EPA.

United States
Environmental Protection
Agency

Region 4
Office of Public Affairs
345 Courtland Street, NE
Atlanta, GA 30365

Alabama
Florida
Georgia
Kentucky

Mississippi
North Carolina
South Carolina
Tennessee

EPA Environmental News

(404) 881-3004

ERRB
RECEIVED
FEB 26 1988
EPA — REGION IV
ATLANTA, GA.

H. Michael Henderson
(404) 347 - 3004

PRESS ADVISORY

ATLANTA, GEORGIA - The U. S. Environmental Protection Agency, Region IV will extend the three-week public comment on the remedial alternatives suggested in the Chemtronics Superfund site Feasibility Study for two additional weeks. The comment period began on February 23, 1988.

In response to citizen concerns expressed at the February 23, 1988 public informational meeting the new deadline for comments will be Friday, April 1, 1988.

Written comments should be sent to Jon Bornholm, Remedial Project Manager, USEPA - Region IV, 345 Courtland Street, N. E., Atlanta, Georgia 30365.

Documents relating to EPA activities at the Chemtronics site are available for citizen review at the Warren Wilson College Library, 701 Warren Wilson College, Swannanoa, NC, the Buncombe County Office of Emergency Medical Services, 8 New Leicester Highway, Asheville, NC, and the University of North Carolina at Asheville, Ramsey Library, One University Heights, Asheville, NC.

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###

4B THE CHARLOTTE OBSERVER Friday, April 5, 1985

Tear Gas, Lethal Chemical Share Name

By JACK HORAN
And TEX O'NEILL
Staff Writers

Operators of a chemical warfare and munitions plant near Asheville made tear-gas shells in the late 1960s that, in an apparent coincidence, bore the name of a chemical agent that kills by blistering the lungs of its victims.

The designation "CX" for both chemicals has confused federal regulators and led people who live near the plant to wonder whether operators made the blistering agent — and perhaps other lethal agents — at the Buncombe County site.

Last January, The Observer disclosed that operators secretly made 150,000 pounds of the chemical warfare agent BZ for the Army between 1962 and 1966. BZ causes hallucinations similar to those produced by the drug LSD.

A just-released document prepared for the U.S. Environmental Protection Agency (EPA) cites experimental production of "CX" at the plant now owned by Chemtronics Inc. "CX" is the name the Army uses for phosgene oxime, a lethal blistering agent, according to a chemical warfare official for the Army.

The official, Andrew Anderson, said he was certain the plant produced no "surety" agents — those that incapacitate or kill — other than BZ. Tear gas is not considered a surety agent.

"I'm 99.99% sure they never made any CX (blistering agent) at this site," said Anderson, chief of the assessment division of the Toxic and Hazardous Materials Agency in Aberdeen, Md. "... I think it was a designation they used locally. It's not an Army designation."

The mention of CX appeared in a document outlining how an investigation of hazardous wastes buried at the site near Swannanoa will proceed. The EPA is overseeing a "superfund" cleanup of the site.

"At one time," the EPA document says, "Northrop reportedly experimented with production of CX (burning CS)." CS stands for tear gas.

Northrop is Northrop Carolina Inc., a former subsidiary of Northrop Inc., the Los Angeles-based aircraft manufacturer. A Northrop spokeswoman confirmed this week the subsidiary made CX shells but referred further questions to the Army.

Two former Northrop officials also told The Observer the company didn't make the blistering agent.

John Schulthels, now president of Chemtronics, and F.M. Hudson, who was in charge of BZ quality control, said they doubted phosgene oxime was ever produced at the site.

"That CX we never messed with," said Schulthels. Added Hudson: "We never did anything in the way of phosgene or phosgene-type production out there."

On Tuesday, the subject of CX came up in an EPA-sponsored public meeting in Swannanoa. At the meeting was Mary Leslie of Camp Dresser & McKee, Inc., an Atlanta consulting firm that prepared the document and will do the site investigation for EPA.

When a questioner asked about CX, site manager Leslie replied she didn't know whether it referred to tear gas or the blistering agent.

"No one really knows," she said Thursday from a company office in Tampa. "It's something we're going to look into."

CX, the blistering agent, has never been stockpiled by the United States, according to Art Whitney, spokesman for the Army Materiel Command in Alexandria, Va.

Whitney, citing a field manual on chemical warfare agents, said CX causes a bee-stinglike pain on the skin and forms welts that are followed within 24 hours by scabs. He said inhalation of CX is deadly.

4B THE CHARLOTTE OBSERVER Friday, April 5, 1985

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By JACK HORAN
And TEX O'NEILL
Staff Writers

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The mention of CX appeared in a document outlining how an investigation of hazardous wastes buried at the site near Swannanoa will proceed. The EPA is overseeing a "superfund" cleanup of the site.

"At one time," the EPA document says, "Northrop reportedly experimented with production of CX (burning CS)." CS stands for tear gas.

Northrop is Northrop Carolina Inc., a former subsidiary of Northrop Inc., the Los Angeles-based aircraft manufacturer. A Northrop spokeswoman confirmed this week the subsidiary made CX shells but referred further questions to the Army.

Two former Northrop officials also told The Observer the company didn't make the blistering agent.

John Schultheis, now president of Chemtronics, and F.M. Hudson, who was in charge of BZ quality control, said they doubted phosgene oxime was ever produced at the site.

"That CX we never messed with," said Schultheis. Added Hudson: "We never did anything in the way of phosgene or phosgene-type production out there."

On Tuesday, the subject of CX came up in an EPA-sponsored public meeting in Swannanoa. At the meeting was Mary Leslie of Camp Dresser & McKee, Inc., an Atlanta consulting firm that prepared the document and will do the site investigation for EPA.

When a questioner asked about CX, site manager Leslie replied she didn't know whether it referred to tear gas or the blistering agent.

"No one really knows," she said Thursday from a company office in Tampa. "It's something we're going to look into."

CX, the blistering agent, has never been stockpiled by the United States, according to Art Whitney, spokesman for the Army Materiel Command in Alexandria, Va.

Whitney, citing a field manual on chemical warfare agents, said CX causes a bee-stinglike pain on the skin and forms welts that are followed within 24 hours by scabs. He said inhalation of CX is deadly.

Charlotte N.C. Observer 4/3/85

EPA Officials Explain BZ Cleanup Plan

By NANCY WEBB
Staff Writer

SWANNANOA — Environmental Protection Agency (EPA) officials told a gathering of about 80 Swannanoa Valley residents Tuesday their plan for determining how much and what kinds of hazardous waste are buried at a former chemical warfare production site in the area.

During a question-and-answer session, the residents voiced concern about security at the site, immunity for site employees who have information about additional burial sites and testing of private wells for possible contamination.

In January, The Observer reported that wastes from manufacturing 3-quinuclidinyl benzilate, a hallucinogen known as BZ, might not have been properly neutralized before being buried at the site near Swannanoa in Buncombe County. BZ waste is believed buried in 300 to 500 drums in four or five landfills.

Inhalation of even a speck of BZ can cause up to seven days of disorientation and hallucinations similar to those caused by LSD. Both the Army and the EPA have said there is no imminent danger to the public from the BZ waste.

"The sooner this cleanup is done, the sooner it's finished and the sooner we have some of these companies pay the price the better off we'll be," said area resident Henry Kreitzer, a retired Air Force colonel. "They should not have been burying this stuff in the first place."

The plan presented Tuesday is a guide for the EPA's site investigation, which involves taking samples and determining the scope of the cleanup.

Wastes discovered at the site, including BZ and tear gas, were both made for the Army in the 1960s by two previous site owners. The wastes were left after nearly 30 years of manufacturing at the site now owned by Chemtronics Inc.

Audience members listened intently as EPA spokesman Jim Orban explained that the first step will be a preliminary investigation, followed by a feasibility study to determine remedies for the cleanup.

Before the cleanup can begin there will be another public meeting to explain the proposed process to area residents, Orban said. No timetable for the investigation or cleanup was presented.

Lawyer Bob Warren, an area resident, told Orban the EPA should make companies that occupied the site produce lists of employees and those employees should be contacted. Warren also suggested the employees be given immunity from prosecution.

Charlotte Observer 4/3/85

7 More Sites Identified As Waste Dumps

By JACK HORAN
And TEX O'NEILL
Staff Writers

SWANNANOA — The federal cleanup at the Chemtronics Inc. site in Buncombe County may have expanded Tuesday when a former production supervisor revealed seven previously unidentified chemical warfare and munitions waste sites.

The sites identified by Roy Burleson, 47, include six on the 1,027-acre property where the chemical warfare agent BZ — a hallucinogenic compound — was made for the Army in the 1960s.

The seventh site is along U.S. 70, six-tenths of a mile east of Swannanoa and about 2 miles from the Chemtronics property, designated for a "superfund" cleanup by the Environmental Protection Agency (EPA).

EPA officials said they will investigate the sites that Burleson said contain waste from the production of BZ, tear gas and explosives.

The disclosures by Burleson, who worked at the plant from 1963 to 1968, brought to 31 the number of known or suspected waste sites either on the mountainous property or elsewhere in the Swannanoa area.

"I know all the spots probably. Everything was poured on the ground. Trenches dug and filled over," Burleson said.

He made the disclosures at his home to EPA officials from Atlanta just hours before a public meeting on the site cleanup. He based his information on personal experiences and conversations with other workers.

Burleson said he worked for the previous owners, Amcel Propulsion Co., a subsidiary of Celanese Corp., a producer of chemicals, fibers and plastics; and Northrop Carolina Inc., a subsidiary of Northrop Inc., an aircraft manu-

See 7 MORE Next Page

Continued From Preceding Page

facturer.

In January, The Observer reported that Army officials thought wastes from BZ — 3-quinuclidinyl benzilate — may not have been properly neutralized before burial.

"There was a lot of waste buried off the site. BZ was not the only thing we were manufacturing. Everything (types of waste) was buried together on the site," Burleson said.

The EPA relied on accounts by Northrop Carolina officials and interviews with former employees of both companies in compiling the 23 original waste sites. The Northrop accounts did not include the sites Burleson named.

Asked about the suspected sites, Northrop spokeswoman Maria Oharenko in Los Angeles said late Tuesday that "we turned in to the EPA all the sites we were aware of."

Burleson also recently revealed in a television interview an eighth burial site near Bee Tree Creek several hundred yards from the Chemtronics property.

The waste site along U.S. 70 begins beside a propane gas company and extends eastward in a vacant field, he said.

EPA official Jim Orban said he expects to learn about more waste sites as EPA's investigation continues.

"If there's a reality to these seven sites," Orban said, "It adds more work, it adds more time to the cleanup."

Apr. 3, 1985
The Asheville Citizen

Next Step In Waste Cleanup

Companies May Hire Contractor

By G. DALE NEAL
Staff Writer

The next step in the cleanup of hazardous waste at the Chemtronics plant in Swannanoa may be taken by the companies responsible for burying the toxic materials, Environmental Protection Agency officials said Tuesday.

Chemtronics Inc. and Northrop, a former owner of the site, may offer to hire a contractor to investigate the 23 burial sites on the 1,037-acre facility and devise a feasibility study to clean up the toxic wastes, according to Jim Orban of the EPA regional office in Atlanta.

The alternative would be for EPA to contract with Camp, Dresser and McKee to do the work, Orban told the some 75 local residents attending the public meeting at Swannanoa Elementary School.

The Chemtronics site was cited on the EPA's original 1982 Superfund list as one of the nation's most dangerous toxic waste dumps, largely on the basis of acid lagoons that drained away years ago.

Last fall, EPA officials learned that BZ, a powerful LSD-like hallucinogen, was manufactured for Army chemical warfare stockpiles during the 1960s by Amcel Propulsion and Northrop — former owners of the facility.

Mary Leslie of Camp, Dresser and McKee outlined the information gathered so far in the proposed work plan for the Chemtronics site.

In the next phase, samples will be taken from deep wells to determine the extent of groundwater contamination. Trenches will be carefully dug through fields where drums of waste from BZ and CS tear gas are buried, Leslie said.

Given the fractured bedrock of the area, locating the flow of any contamination through the groundwater will be difficult. "Can we find it, can we collect it, can we treat it? These are the critical answers we don't have yet," she said.

To date, no contaminants from the Chemtronics site seem to have migrated into neighboring wells, the officials said. There are contaminants in the Charles D. Owen Co. industrial wells, but those have been traced to another source.

Not all of the toxic waste may be removed in the final cleanup, Orban said.

Copies of the EPA work plan for the Chemtronics site are available for inspection at the libraries of Warren Wilson College and the University of North Carolina at Asheville. The EPA will take public comment on the draft plan until April 19.

After a final work plan is approved, the field work on sampling the disposal sites should begin within 60 days.

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Section B The Charlotte Observer
Saturday, March 30, 1985

EPA Might Transfer BZ To Army Site

By TEX O'NEILL
And JACK HORAN
Staff Writers

The Environmental Protection Agency (EPA) is considering digging up chemical wastes at a former chemical warfare production site near Asheville and disposing of them at an Army facility, according to a draft plan to clean up the contaminated site.

The proposal is one of five the EPA is considering to dispose of various wastes, including BZ, a hallucinogenic compound, and tear gas, both made for the Army in the 1960s. They were left after nearly 30 years of manufacturing at the site, now owned by Chemtronics Inc. near Swannanoa in Buncombe County.

The plan indicates the EPA may run into difficulty if it tries to dispose of the wastes at two hazardous-waste landfills in Alabama and South Carolina.

"Initial inquiries into potential offsite disposal facilities (Pinewood, S.C., and Emelle, Ala.) have indicated that acceptance of the BZ wastes, with or without neutralization, may be a problem," the draft says. "This may necessitate transporting the wastes a much greater distance from the site, thereby substantially increasing the cost of disposal." No dollar figures are cited for the various disposal scenarios.

The draft suggests the wastes might be excavated, placed in containers and taken to the Army's Pine Bluff, Ark., arsenal.

The draft plan is a guide for the EPA's site investigation, which involves taking samples and determining the scope of the cleanup. After completing that investigation within 15 months, the actual cleanup can begin.

In January, The Observer reported that wastes from manufacturing 3-quinuclidinyl benzilate, a hallucinogen known as BZ, may not have been properly neutralized before burial at the site. Inhalation of only a speck of BZ can cause up to seven days of disorientation and hallucinations similar to those caused by LSD.

The Buncombe County site was placed on the EPA's cleanup list in 1982 because of groundwat contamination apparently unrelated to the BZ pr duction. BZ was manufactured for the Army by two previous owners of the Chemtronics site. Chemtronics does not produce chemical warfare agents.

Other proposals in the draft plan include collecting and treating contaminated groundwater, containing without treatment all wastes in a landfill on the 1,027-acre site, and doing nothing.

The "no action alternative," the work plan says, isn't acceptable, given the level of site contamination.

Although about 150,000 pounds of BZ was produced for the Army by two previous owners of the Chemtronics site, the Army has said it will not accept responsibility for disposal of waste from BZ production.

BZ waste is believed buried in 300 to 500 drums in four or five landfills at the site. Both the Army and the EPA have said there is no imminent danger to the public from BZ.

EPA probes LSD-like chemical in dump

Atlanta Journal 1/28/85

United Press International

ASHEVILLE, N.C. — Officials are seeking to determine if waste from a chemical warfare agent so powerful that one speck can cause a seven-day LSD-like trip is dangerous 20 years after it was buried by the Army in landfills.

The Environmental Protection Agency is questioning workers who buried the waste from a chemical known as BZ, or 3-quinuclidinyl benzilate, near Asheville in the 1960s.

Experts say the chemical is so strong a tiny speck can produce seven days of disorientation and hallucinations similar to those caused by LSD.

BZ was made in strict secrecy for the military by two companies on the site of the present Chemtronics Inc. plant, one mile north of where some 300 to 500 drums of the waste are buried in two landfills, the Charlotte Observer reported Sunday.

Chemtronics does not produce chemical warfare agents.

Neither Army nor EPA officials could be reached for comment. But an Army official raised concern at a meeting in September, saying BZ waste may not have been fully neutralized by a "kill solution" before being buried.

"He wasn't sure," said the EPA's Dennis Manganiello, who attended the meeting with Army official Neil Baker. "He was talking about the worst possible case. If BZ wasn't in a certain form, it would be very dangerous to handle. If it was inert or co-mingled wih other materials, it wouldn't be as dangerous."

The landfills are on the Superfund hazardous waste cleanup list, and the EPA started interviewing former employees last week to determine how they disposed of the chemicals. Officials said the investigation will take at least a year before any hazardous wastes are removed.

The EPA has not estimated cleanup costs, but an official at Chemtronics said it would take five years and $5 million if active BZ is found.

Military officials, however, say the BZ waste, even if active, poses no immediate danger to the public because it is underground.

Amcel Propulsion Co., a subsidiary of the New York-based Celanese Corp., and Northrop Inc., a Los Angeles-based aircraft manufacturer, produced 150,000 pounds of the chemical from 1962 to 1966 at the site.

The BZ waste is part of a legacy of Army efforts dating to the 1950s to expand chemical warfare stockpiles, which it maintained since World War I.

The Army became interested in BZ because, unlike nerve gas, it does not kill or injure. The drug wears off in one to seven days.

EPA probes chemical warfare site danger

United Press International

ASHEVILLE, N.C. — Officials are seeking to determine whether waste from a chemical warfare agent, so powerful that one speck can cause a seven-day LSD-like trip, is dangerous 20 years after it was buried by the Army in landfills:

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Young

FROM 1A

ber, they'll say he hasn't done anything."

Indeed, the $130 million Underground Atlanta entertainment complex and the $25 million renovation of the beleaguered Atlanta Zoo remain on the "to-do" list. Those and other downtown development projects were mentioned in Young's speech. But the best he could say about them was that plans were progressing well.

So Young and his staff put together a list of facts, figures and trends that he ticked off to the council in his first prepared-in-advance State of the City address. And although the mayor was clearly less comfortable than he is in his usual speaking mode and although thus far he has no publicly declared challenger, Young went on record with some figures that are likely to be recited again when the re-election campaign is under way.

He talked, among other things, about the 25,000 new jobs, the $1 billion worth of building permits, the visits to Atlanta by six foreign heads of state, the growing international service industry, the new sewer treatment system, the dropping crime rate and the Davis Cup tennis tournament.

Imagine his staff's frustration when the same old complaint rebounded out of the council chambers: "visionary without specifics." Council members charged that the mayor talked about what he wanted to do in the future — urge developers to work on more of a pedestrian scale, spread economic progress to

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AT&T posts $1.4 billion profit in '84

From Wire Reports

NEW YORK — American Telephone & Telegraph Co. said today that it earned less than expected in the first year after divestiture but still posted a profit of almost $1.4 billion.

The telecommunications giant earned $1.379 billion, or $1.25 per share, on revenue of $33.19 billion in 1984.

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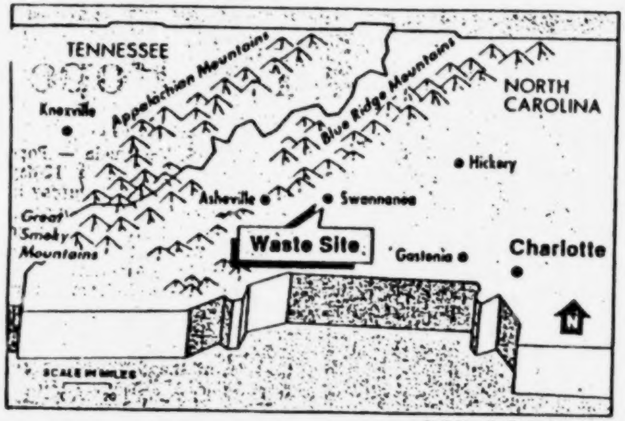
Chemical Weapon Waste Buried In N.

Secret Project's Debris Might Remain Pote



Staff Map By EARNEST HART

hemical Dump: BZ waste is buried in two landfills at the present Chemtronics Inc. plant a mile north of Swannanoa. The substance was made for the Army 20 years ago.

By JACK HORAN and TEX O'NEILL
Staff Writers

Waste from a powerful chemical warfare agent produced for the Army 20 years ago is buried near Asheville and may still be dangerous, The Observer has learned.

The chemical is a hallucinogen known as BZ. It is so powerful that only a speck can produce seven days of disorientation and hallucinations similar to those caused by LSD.

BZ was made in strict secrecy on the site of the present Chemtronics Inc. plant, where the waste is buried in two landfills. Until now, most people didn't know the chemical warfare agent was produced there.

An Army official raised concern in September that BZ waste may not have been fully neutralized by a "kill solution" before burial and could remain potent.

"We were told unofficially by the Army that that particular solution didn't always kill BZ," said Chemtronics President John Schultheis. "We were led to believe that since the days of (previous owners) Amcel and Northrop, that ratio of kill solution to waste material had been insufficient."

Federal officials say, however, that the BZ waste — even if active — poses no immediate danger to the public because it remains underground.

The U.S. Environmental Protection Agency (EPA) plans to sample the landfills containing an estimated 300 to 500 drums of BZ waste for active BZ. The EPA is involved because the landfills are on a "superfund" hazardous-waste cleanup site.

The BZ waste at the Chemtronics site a mile north of Swannanoa is a legacy of Army efforts dating to the 1950s to expand chemical warfare stockpiles, which it maintained since World War I.

For reasons that are still classified "secret," the Army ordered "urgent" production of the odorless, white powder in 1961. The BZ — for 3-quinuclidinyl benzilate — v
bombs at an Arkansas arsenal. \
over enemy troops, it would ter
pacitate the enemy soon after in

In all, two manufacturers pro
pounds of BZ from 1962 to 1966
according to strict Army specifi
the Army disclaims any liabilit
up the BZ waste, saying it's the
of the manufacturers.

The Army has offered techni
but manufacturers want the mi
an active role in what could be
five-year cleanup of BZ and othe

The Observer also learned:

- A July 7, 1965, fire burne
1,000 pounds of BZ. To protec
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fire in the "jet fuel factory." Usi
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evacuated more than 2,000 resid

See CHEMICAL Page

Chemical Weapon Waste Buried Near Asheville

Continued From Page 1A

airborne contamination by BZ. No one was injured or exposed to BZ.

- Manufacturers required BZ workers to play Ping-Pong during the last two hours of each work shift so staff nurses could detect behavioral signs of contamination and place any exposed workers in a padded cell.
- Despite airtight plastic suits and an elaborate decontamination procedure, as many as 20 workers were exposed to BZ. The compound caused reactions ranging from mere dilation of the eyes to an incident in which one disoriented victim broke out of the padded cell, slugged a guard and fled shoeless to nearby woods.

The two BZ waste landfills are located on a 1,027-acre, mountainous tract in the Swannanoa Valley of eastern Buncombe County, less than a mile from Warren Wilson College. The BZ waste landfills — as well as 21 other waste sites EPA has identified on the site of the former chemical warfare and munitions plant — are overgrown with pines and hardwoods.

Officially, the Army maintains there is no reason to suspect active BZ is buried there, because it would have decomposed years ago.

So do the two companies that made BZ: Celanese Corp., a New York-based producer of chemicals, fibers and plastics, and Northrop Inc., a Los Angeles-based aircraft manufacturer. A Northrop spokeswoman says BZ waste "was neutralized in accordance to the formula given to us by DOD (the Department of Defense)."

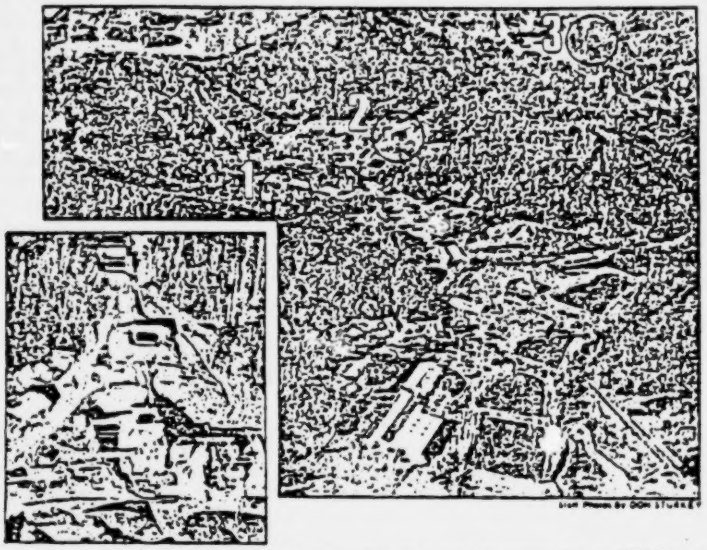
Celanese produced BZ through a subsidiary, Amcel Propulsion Co., before Northrop bought the subsidiary in 1965 and renamed it Northrop Carolina Inc.

The official who oversaw BZ production for both Amcel and Northrop said he believes the caustic kill solution completely neutralized BZ wastes. "Our experience was that it was effective," said Lewis Rothstein, 64, who now works for the Navy. "I'm confident it would have been broken down by the (solution) a long time ago."

But the Army official and Chemtronics officials cited two possible problems with the kill procedure that suggest active BZ exists.

Chemtronics officials say Army official Neil Baker told them at a meeting on Sept. 6 that research shows the caustic solution used 20 years ago could be inadequate to neutralize BZ particles, which were buried with clothing, floor sweepings and other debris.

That day, Chemtronics President Schultheis said he told Baker that he and safety officer Calvin Leigh interviewed workers in 1971 about the disposal of BZ wastes. Schultheis said one or two workers told them they sometimes simply poured "a little" solution on top before drummed waste was buried.



Staff Photo by DON STURKEY

Aerial View: Numbers (1) and (3) locate burial sites of wastes of chemical warfare agent BZ at Chemtronics Inc. plant east of Asheville. No. (2) shows former BZ production building that caught fire in 1965. Inset shows closeup of former BZ production building. The four lagoons in the right of the photo are fish ponds.

Schultheis said Baker told them that stirring was necessary to ensure complete contact between the wastes and the solution.

The EPA's Dennis Manganiello, who also attended the meeting, remembers Baker had doubts about whether BZ waste was neutralized: "He wasn't sure. He was talking about the worst possible case. If BZ wasn't in a certain form, it would be very dangerous to handle. If it was inert or co-mingled with other materials, it wouldn't be as dangerous."

Schultheis

The Observer was unable to interview Baker about his concerns despite three weeks of repeated efforts.

At the time, Baker was a surety officer from the Rock Island, Ill., Arsenal, headquarters of the Army's Armament, Munitions and Chemical Command. A surety officer is responsible for chemical agents deemed so dangerous or crucial to national security as to require special protection.

Baker and three other Army officials, all dressed in civilian clothes, visited the Chemtronics site last Sept. 6 after the EPA learned that two drums marked "BZ" had popped out of a landfill.

For safety reasons, Schultheis wouldn't allow the officials to sample the drums' contents. Instead, the Army tested residue from the exposed inner wall of a single barrel. The limited testing didn't show active BZ in the black goo.

Despite official Army assurances that there is no active BZ in the barrels, EPA is proceeding with its cleanup plan as if active BZ is buried there.

"We're going to be prepared for the worst," said the EPA's Jon Bornholm, the Atlanta region's project manager for the Chemtronics site. "For safety reasons, we have to assume the worst."

No one has attempted to excavate the buried drums. The EPA doesn't expect to begin for at least a year — after it has devised a detailed plan to remove and dispose of all the wastes at the site.

While Chemtronics wants the Army to take the lead in cleaning up the BZ landfills, the Army has disclaimed responsibility. An Army spokesman says the cleanup is the EPA's and contractors' problem, and it has agreed to give technical assistance only. The EPA hasn't asked the Army to do the cleanup.

The EPA views the BZ waste as a potentially dangerous chemical no worse than others encountered in superfund cleanups.

"It doesn't kill you. And lots of things we deal with will kill you," said Jim Orban, an EPA unit chief in the remedial action section in Atlanta.

BZ was invented about 35 years ago by the Nutley, N.J., pharmaceutical company of Hoffmann-LaRoche Inc. to inhibit gastric secretions.

Amcel began the country's only production of BZ for the Army in 1962.

Together, Amcel and Northrop produced 150,000 pounds of BZ in military secrecy, said F.M. Hudson, who was in charge of BZ quality control. Rothstein, who oversaw BZ production, said Amcel produced about 90% of the BZ at the site.

The Army periodically picked up the BZ and escorted it under guard to its Pine Bluff, Ark., Arsenal, where much of the white powder was loaded into bombs and bomb clusters. But the bombs were never used because BZ's effect is unpredictable, causing some victims to become docile, while others become violent.

Today, Army documents show, Pine Bluff keeps under guard about 10,750 pounds of pure BZ, 85,000 pounds of BZ in bombs and clusters and 300,000 pounds of BZ residue and contaminated material. It's one of four basic types of chemical warfare agents, including nerve and mustard gases, that the Army plans to destroy. The BZ is stockpiled in igloolike bunkers, awaiting destruction when the Army completes a $40 million facility to incinerate it beginning in 1987.

During production, Amcel and Northrop Carolina (NCI) neutralized and disposed of BZ-contaminated materials, according to an NCI memo. That includes at least one batch of perhaps several thousand pounds of substandard BZ in drums, according to Chemtronics officials.

The 1971 memo, entitled "NC Burial Grounds" and written by safety officer Leigh, said of burial ground No. 8: "This was one of the first burial grounds established during the early part of 1963 by Amcel (Celanese). This burial ground was utilized to bury the Agent BZ. The BZ was buried in metal containers after the contents were fully treated with 'kill' solution ...."

The memo said of burial ground No. 10: "... NCI utilized this area to bury BZ Agent from October 1965 through May 1966 ...."

Also buried at the site were spent cyanide, tear gas waste, acids, solvents and the residues of explosives, rocket propellants and flares.

Asked about the memo, a Celanese spokesman said all Amcel records were passed on to NCI in 1965. The spokesman said Celanese "... conducted an extensive investigation of Amcel's operations of 20 years ago, and we have been unable to determine that the company disposed of hazardous substances at the site ...."

He said former Amcel executives and scientists "have assured the corporation today ... that (BZ waste) is fully neutralized if it ever was there and presents no danger."

Disagreement over who disposed of the waste extends to who should clean it up. Under a superfund cleanup using federal money, companies reimburse EPA according to a proportionate share of their liability.

While Chemtronics and Northrop say the Army should take the lead in the cleanup, Celanese says recent federal waste management legislation makes Chemtronics responsible for the entire site.

Chemtronics, owned by Halliburton Inc. since 1980, didn't produce BZ. Schultheis said Chemtronics makes no chemical warfare agents. It manufactures commercial explosives, flame retardants and chemical warfare decontamination kits for the military.

The wastes didn't come to the attention of regulators until 1980, when the EPA and state environmental regulators investigated the site after a resident complained of odors from seven open acid waste pits operated by Chemtronics. In 1979, a Chemtronics waste lagoon leaked into the ground.

The inspection eventually led the N.C. Division of Environmental Management to discover groundwater contamination. Two years later, the EPA declared Chemtronics a superfund cleanup site.

See FEDERAL Next Page

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Federal Cleanup Of Sites Planned

Continued From Preceding Page

The EPA said sampling had detected 62 hazardous organic compounds and 20 metals in the waste pits, since closed, and in the groundwater and surface streams. EPA said the compounds include cancer-causing agents such as vinyl chloride and benzene and poisons such as cyanide and mercury.

Chemtronics's Schultheis said no breakdown products of BZ have been found in the monitoring wells at the site.

Felice Johnson, director of environmental affairs for Chemtronics, said the contaminants would take 40 years to reach the nearest property at the current groundwater movement rate.

Nevertheless, the EPA wrote last September, "As a result of such release, the drinking water supply of an estimated 350 people, and the recreational uses of Bee Tree Creek (which borders the site) may be adversely affected."

The EPA's Orban said the potential for contamination exists if the water enters a geologic fault and moves rapidly.

Although the EPA's attention during the past four years apparently focused on the groundwater contamination only, Chemtronics's Schultheis told The Observer he was certain Chemtronics mentioned BZ to the EPA during the 1980 site inspection.

"I said, 'You people are aware there are more burial sites on the property than acid pits and lagoons.' " He said they were furnished with a map of the burial sites.

"I think the EPA was, in one sense, burying their heads for a while," Schultheis said, "because all the media and the public were focusing on the acid pits."

An EPA report of the 1980 inspection noted a drum labeled "Riot Control Agent CS-1 XXXX" but no mention of BZ. CS refers to tear gas, made for the Vietnam War.

The EPA's Bornholm said the EPA first learned about the BZ in July, when it received documents from Northrop. EPA said it discovered the exposed BZ drums last Aug. 23 during a site visit and asked the Army to inspect them.

The Army sent Neil Baker; Capt. Paul Jones and Sgt. Jeffrey Hatcher, members of the Army's Technical Escort Detachment, from the Pine Bluff Arsenal; and Ed Meseke, a civilian specialist in BZ destruction, from the Edgewood Arsenal in Aberdeen, Md.

Leigh

Joining them at the Sept. 6 inspection was Manganiello, an onscene coordinator of the EPA's Emergency Remedial Response Branch; and, for Chemtronics, Schultheis, Johnson and Leigh. Both Schultheis and Leigh had worked for Amcel and Northrop.

After the meeting, at which Baker discussed the possibly ineffective neutralization, Johnson led the two soldiers to the drums, which sat upright in the woods behind Building 104. The drums were marked with yellow tape reading "BZ toxic" and "CS BZ CS" when two Observer reporters visited the site three weeks ago.

The soldiers — wearing air-purifying respirators and dressed in rubber gloves, boots, overalls and aprons — collected a single sample.

Baker then asked Schultheis if Chemtronics would put the drums in larger drums and escort them to the airport, where they would be flown to Pine Bluff for further testing.

Schultheis said he refused because he wasn't licensed to transport hazardous wastes. He said Baker then said the Army might send a team back and helicopter the drums to Pine Bluff.

The Army didn't return.

On Nov. 16, the EPA's Bornholm wrote Brig. Gen. Bobby Robinson, commander of the Army Materiel Command in Alexandria, Va., asking if the Army would help test or remove the BZ waste.

"Because of the unknowns associated with the buried BZ at this site . . . ," Bornholm wrote, "we need to arrange a meeting to clarify (the Defense Department's) role."

Robinson, who died Jan. 14, was in charge of the command that oversees chemical weapons at the Pine Bluff, Rock Island and Edgewood arsenals.

Bornholm said that on Dec. 5 he met with three Army officials from Aberdeen, Richard Roux, Andrew Anderson and Meseke, all members of the Army's Toxic and Hazardous Materials Agency. At this meeting, Bornholm said, the officials told him a review of production contracts indicated all BZ had been properly neutralized.

Recently, Roux told The Observer that even if the waste wasn't disposed of properly, he thought there was no active BZ because it was a chemically unstable compound that would decompose in water.

He said BZ has a five-year shelf life, meaning the Army considers it to be reliably potent for no more than five years.

As part of its inquiry, the EPA last week began interviewing former employees to determine how BZ wastes and other chemicals were disposed of.

Bornholm said the investigation will take at least a year before any hazardous wastes are removed. While the [illegible] has no estimate of how long the clea[illegible] will take or its cost, Schultheis estimated it would take five years and cost $5 million if active BZ is found.

Schultheis said because BZ was produced for the Army, he wants any BZ waste incinerated at the Pine Bluff Arsenal. When completed, it will be the only facility anywhere capable of destroying the compound.

According to plans filed with the State of Arkansas, the Army says the incineration facility is necessary because "as the munitions age, deterioration is inevitable, hazardous conditions may arise, and the item may become increasingly unstable."

The plans call for incinerating BZ and BZ-filled munitions as well as wooden containers and wastewater contaminated by BZ.

"Anything that has potential contact with BZ, including wastewater, is incinerated," said Schultheis of the Pine Bluff facility. "It sort of belies the other approaches as being acceptable. They're sort of talking out of both sides of their mouth."

Public meeting on Chemtronics Tuesday

Black Mountain News
Feb 18, 1988

Results of an extensive Feasibility Study (FS) for the Chemtronics Superfund site in Swannanoa will be announced at a public meeting at Owen High School on Tuesday, Feb. 23 beginning at 7:00 p.m.

The U.S. Environmental Protection Agency (EPA) from District IV in Atlanta will conduct the meeting. EPA will detail recommended remedial actions to clean up the site. The alternatives considered by EPA range all the way from building caps for contaminated areas to sophisticated chemical solidification of soils.

The public in general and those who reside in the Swannanoa area in particular are urged to attend, according to Jon Bornholm, project manager for EPA.

The feasibility study was prepared for the EPA by Sirrine Environmental Consultants of Greenville, S.C. under the eye of the EPA, the two sponsors of the Chemtronics Site RE/FS action and a panel of environment engineers nationwide.

The purpose of the FS was to examine all possible methods of cleaning up the site, weeding out unworkable technologies and recommending workable site-wide alternatives; and to outline the considerations EPA could use in recommending remedial action (clean up).

In 1987 a Boston-based engineering firm completed the Remedial Investigation (RI) for the site. That study identified specific areas recommended for remedial action.

Investigators concluded that chemicals from the site have not migrated beyond property lines nor are they likely to do so within a span of 25 years.

In the FS phase, next Tuesday's topic, investigators evaluated chemicals found during the investigation. The engineers identified several targets for clean up: areas where organics and metals appeared in groundwater, where drums were buried, where remedial levels or tear gas and tear gas degradation products were detected in the soil, where chemical-agent BA and its degradation products were detected in the soil, where explosives, tear gas and tear gas degradation products were detected on the surface, and others.

The technical screenings of alternatives analyzed how effective the process would be in solving the clean up problems, how reliable it would be and how physically practical the process would be.

The health/environmental screening dealt with the safety of any process. If contaminated material was removed from a site, what would the risks be to human, wild life and the environment?

Cost became a factor only when comparing options that would achieve the same level of treatment. This means that if several alternative remedies were equally effective in terms of cleanup, relative cost would then be considered.

Each alternative will be presented at the public meeting on February 23 at Owen High School. The public will be able to ask questions and make comments. Under the law, the public then has three weeks to make comments and record exceptions to the ERA's recommendations.

After the public comment period, the EPA will prepare a record of decision which will document what will actually be done to implement the cleanup at the Chemtronics Site.

EPA Unveils Chemtronics Cleanup Plan

ASHEVILLE CITIZEN
FEB 18, 1988

By CLARKE MORRISON
Staff Writer

Incineration of contaminated soil and the removal and treatment of tainted groundwater are two methods being considered for cleaning up dump areas at Chemtronics Inc. in Swannanoa.

The U.S. Environmental Protection Agency has come up with recommendations for destroying or containing the explosives, solvents, cyanide and other chemicals at the former munitions plant.

But just what measures are used could depend on the concerns raised at a public hearing on the plan next Tuesday at Owen High School, said EPA project manager Jon Bornholm.

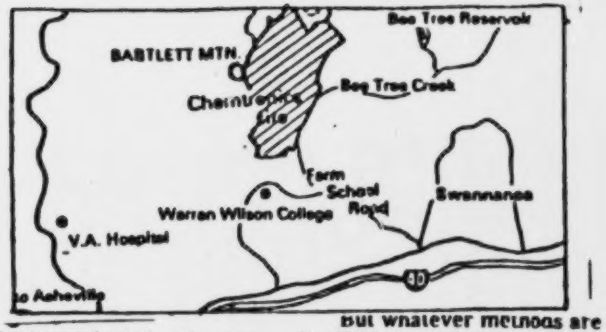
Burning the chemical-laced soil would be the most permanent, effective and costly solution. But if area residents express opposition to incineration, that option may have to be scrapped, he said.

In lieu of incineration, the EPA would allow the contaminants to remain at the various dumps scattered around the 1,027-acre site, but would cap them with layers of plastic, clay and other materials to prevent rain from washing the chemicals into the groundwater, Bornholm said.

In addition, the plans call for groundwater at the site to be pumped out of the ground through wells and treated so it won't contaminate the drinking water of adjacent areas, he said.

The Chemtronics site off Bee Tree Road was placed on the Superfund national priority list in December 1982 after EPA testing revealed 62 organic compounds and metals in wells used to monitor the site. The plant was constructed in the 1950s and has had several owners. Explosives, solid propellants, rocket motors and chemical warfare agents were manufactured there for the military, and the wastes from those operations were dumped in landfills and pits around the property.

The powerful hallucinogen BZ and a form of tear gas called CZ are among the hazardous wastes believed to have been buried there. However, a nine-month study found neither of the chemicals in the 2,200 samples taken.



The study was conducted with EPA supervision by an environmental consulting firm hired by Chemtronics and Northrup Corp., one of the previous owners of the plant.

A draft feasibility study for cleaning up the site was submitted to EPA in December, and the recommendations will be approved after the comment period that begins with the public hearing and ends March 18, Bornholm said.

The cleanup will cost approximately $12 million if incineration is used, and considerably less if it isn't, he said.

"Incineration would be the most permanent remedy," Bornholm said. "Once you burn it, it's gone."

The cleanup probably will begin this fall, and the on-site work will take one to two years. However, the pumping and treatment of groundwater will go on for up to 30 years. How long the pumping is necessary will depend on if and how much of the contaminated material is incinerated, he said.

"The public comments could have an effect on the remedy," Bornholm said. "Incineration is a hot item up there in North Carolina right now, and if significant numbers don't want incineration then we will have to go back and look at our other options."

Another factor in whether the materials are burned is the quantity of explosives that are found, he said.

But whatever methods are used, the EPA is confident the measures will "adequately protect human health and the environment," Bornholm said.

However, Millie Buchanan of Asheville, a staff member of the Clean Water Fund of North Carolina, said she isn't convinced by Bornholm's claim.

"Either of these options involve a lot of risk to the community, but they may be the best we have," she said. "Incineration has the potential for some serious air pollution because of what they're burning. And with capping you're talking about leaving it there, and even though they may take efforts to contain it, there is always the possibility of it getting into the groundwater."

Buchanan said she and other area residents need more information on the proposed cleanup and other available options.

After the public hearing, EPA will begin negotiations with Chemtronics, Northrup and the Celanese Corp. to pay for the cleanup. Bornholm said that if payment is refused, federal monies will be used and EPA will sue the companies to force payment.

The hearing will begin at 7 p.m. in the auditorium of Owen High School in Swannanoa, and the public is urged to attend.

Wednesday, Feb. 24, 1988

EPA Suggests Incinerating Soil At Chemtronics

Asheville Citizen
Feb 24, 1988

By CLARKE MORRISON
Staff Writer

SWANNANOA — Plans to dig up and burn contaminated soil and explosives at a former military munitions plant were met with skepticism by approximately 200 residents who attended a public hearing on the proposal Tuesday night.

Some told the Environmental Protection Agency officials they should conduct a study on cancer deaths they believe were caused by the solvents, cyanide and other chemicals dumped at various sites around the plant now occupied by Chemtronics Inc.

BORNHOLM

Fears were expressed at the hearing at Owen High School over possible pollution from incineration of the chemical-laced soil and drums.

Environmentalists said they wanted the public comment period, which began with the hearing and is to end March 18, extended to allow more study of the EPA's plans.

"If you burn it, is it not going to go in the air? Will we not be breathing it?" asked Cindy Whithers, who lives near the plant. "I want to stay here. I don't want to run. I don't understand what's going on."

Chuck Pietrosewicz of the U.S. Public Health Service assured Whiters that an incinerator would never be licensed if study showed its emissions would be hazardous.

"Whatever method we select will be protective of human health and the environment," he said.

"I'm concerned for myself and for my whole family," said Jeanette Hensley of Long Branch Road. "We'd like to get it cleaned up."

EPA Project Manager Bornholm told the crowd that incineration of the chemical-laced soil would be the most permanent, effective and costly solution. But if enough opposition to the burning is expressed, the chemicals may have to be left in the ground and efforts made to merely contain them.

Charles Dennison, representing the Harrison Hill Road Committee, said there has been an abnormally high number of cancer cases in his neighborhood because of the contamination.

Dennison asked if there had been any studies of cancer rates in the area. Pietrosewicz said there was no evidence that any of the chemicals had migrated off the site, so such a study wasn't warranted.

Allen Arnold of Black Mountain, a retired chemist, asked why the contaminated soil and drums couldn't be taken to an established off-site incinerator for disposal. Bornholm said on-site incineration would be just as effective and far less costly.

EPA scheduled the public hearing to explain and get comments on the options for cleaning up the various dumps scattered around the 1,027-acre tract where explosives, solid propellants, rocket motors and chemical warfare agents were manufactured for the military.

Instead of removing and burning the soil,

See EPA Page 5C

◆ From Page 1B

EPA may decide to cap the pits and landfills where the chemicals were buried with layers of plastic, clay and other materials to prevent rain from washing the chemicals into the groundwater, Bornholm said.

The plans also call for groundwater at the site to be pumped out through wells and treated so it won't contaminate the drinking water of adjacent areas, he said.

The Chemtronics site off Bee Tree Road was placed on the Superfund national priority list in December 1982 after EPA testing revealed 62 organic compounds and metals in wells used to monitor the site.

The powerful hallucinogen BZ and a form of tear gas called CZ are among the hazardous wastes believed to have been buried there. However, a nine-month study found neither of the chemicals in the 2,200 samples taken. The study was conducted with EPA supervision by a environmental consulting firm hired by Chemtronics and the Northrop Corp., one of the previous owners of the plant.

A draft feasibility study for cleaning up the site was submitted to EPA in December, and the recommendations will be approved after the comment period, Bornholm said.

The cleanup will cost approximately $12 million if incineration is used, and closer to $2 million if it isn't, he said.

The cleanup probably will begin this fall, and the on-site work will take one to two years. However, the pumping and treatment of groundwater will go on for up to 30 years.

Jon Bornholm

Asl :ville Citizen-Times

Other Views

Sunday, Feb. 14, 1988 3D

Credibility Lacking On Waste

Your excellent editorial of Feb. 3 (Another How-Not-To On Hazardous Waste) should be required reading for every state legislator and regulator — and it wouldn't hurt their federal cohorts to study it too.

State officials say they cannot act for a year or more to correct Caldwell County's long-fuming incinerator problem, but in the meantime they cannot tell neighbors whether their children can safely play outside. Unfortunately, this situation is not unique. Neighbors of hazardous waste "Superfund" sites frequently receive similar non-answers from federal officials to their concerns about their drinking water, their air and their children's safety.

Those in charge of protecting our health and environment seem totally incapable of comprehending two basic facts: (1) there is a direct connection between officials' current and past actions and their future ability to inspire the confidence of the public; (2) without public confidence, dealing with our hazardous waste problems will become increasingly more difficult and eventually impossible.

There are serious defects in our environmental laws, the regulations written to enforce them, and the agencies responsible for that enforcement. Until these defects are corrected, and until public health takes precedence over corporate pleadings and concern for the status quo, the public will continue to oppose any siting of hazardous waste facilities, with good reason. And our hazardous waste problems will continue to mount.

Millie Buchanan
Asheville

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APPENDIX D

CONCURRENCES FROM STATE AND FEDERAL AGENCIES AND OTHER EPA PROGRAMS

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Agency for Toxic Substances
and Disease Registry

Memorandum

ERRB
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MAR 25 1988
EPA – REGION IV
ATLANTA, GA.

Date March 25, 1988

From Senior Regional Representative
ATSDR-EPA Liaison

Subject ATSDR Health Assessment for the Chemtronics NPL Site;
Swannanoa, North Carolina

To Jon Bornholm, Project Manager
EPA WMD Superfund Branch

thru Al Hanke, Chief
NC/TN Unit, Superfund Branch
EPA WMD

The Agency for Toxic Substances and Disease Registry has completed its Health Assessment for the above NPL site. A copy of our assessment, with attendant recommendations to address public health threat and remedial action worker safety concerns is attached for your information and use.

As our Health Assessment for this site is now final, the attached document can become part of the EPA Administrative Record for the site and is now available to the general public. You may also wish to share a copy of our assessment with the PRP's for this site.

Our conclusions and recommendations are basically straight forward in nature and have not changed in substance since the draft assessment document which was shared with you earlier. However, if you would like to discuss our assessment in more detail, please let me know.

Chuck Pietrosewicz

Chuck Pietrosewicz

cc: file
ATSDR/OEA
DHHS/PHS Reg. Off.: Mr. Pesses
NC DHS: Dr. Ted Taylor
NC DHS: Ms. Lee Crosby
Buncombe Co. Health Dept.: Dr. James Tenney
Chemtronics Citizen Advisory Board: Mr. Pat Price

Health Assessment for

CHEMTRONICS SITE

SWANNANOA, NORTH CAROLINA

MARCH 21, 1988

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EPA – REGION IV
ATLANTA, GA.

SUMMARY

The Chemtronics site is a 1027-acre National Priority Listing (NPL) site located approximately 10 miles east of Asheville, in Swannanoa, North Carolina. Numerous disposal areas on-site and 3 off-site areas were investigated to determine the existence and/or extent of contamination of soil, surface water, and groundwater. Potential exposure pathways include ingestion and direct contact with soils and inhalation of wind entrained dust from surficial soils, and to a minimal extent, ingestion of contaminated groundwater and surface water. The site may pose a significant public health threat to workers remediating the site if proper training in the use of personal protective equipment and measures to insure worker safety in accordance Occupational Safety and Health Administration (OSHA) regulations and the National Institute for Occupational Safety and Health (NIOSH) guidelines are not adequately implemented. Groundwater from some residential (domestic) wells was analyzed for site-related contaminants. Analytical results from these off-site wells did not demonstrate the presence of contaminants above the detection limits. However, various volatile organic compounds (VOC's) that were found to be major site contaminants were not included in the testing regime. The potential for area residents to be exposed to on-site contaminants appears negligible at this time. Although it appears that off-site migration of contaminants has not occurred, sampling for VOC's should be performed on off-site area residential wells as a precautionary measure.

BACKGROUND

In 1984, the U.S. Environmental Protection Agency (EPA) approached Chemtronics, Incorporated and Northrop Corporation, as two potentially responsible parties and sought a voluntary investigation. In 1985, an Administrative Order of Consent was signed and a Remedial Investigation (RI) begun. The Remedial Investigation Report was completed in April 1987 and the draft Feasibility Study was completed in November 1987. A Record of Decision is scheduled for 2nd quarter 1988.

The Chemtronics site is an active industrial plant located in a rural area of the Swannanoa Township in Buncombe County, North Carolina. The site is heavily wooded with steep terrain. The area east of the site is bordered by Bee Tree Creek, to the north is the Pisgah National Forest, to the west the property line follows a mountain ridge, and to the south is an industrial area. The property is naturally divided into two valleys, the first valley is called Front Valley and the second, Gregg Valley.

The site has had several owners/operators since it was first developed in 1952. A variety of products have been manufactured at the site ranging from explosives and rocket fuel to incapacitating agents and pharmaceutical intermediates. By-products from these manufacturing activities include chlorinated and non-chlorinated solvents, acidic solutions and some metal plating wastes. The owner/operators are listed in the Appendix along with dates of operation and products manufactured. The RI identified 23 on-site disposal areas and 3 off-site disposal areas. The off-site areas include 2 closed municipal landfills: Tropigas and the Walnut/Buckeye Cove Landfill. The other off-site area is the Asheville Dye and Finishing Gravel Pits, which is adjacent to Chemtronics.

The Agency for Toxic Substances and Disease Registry (ATSDR) and the Centers for Disease Control, Center for Environmental Health and Injury Control (CDC, CEHIC) have been involved with this site since early 1985. This involvement not only included performing a Health Assessment but personal interviews with former employees who have reported they were suffering from numerous health problems associated with past employment at the site.[3]

ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

A. ON-SITE CONTAMINATION

There were various waste disposal practices conducted on-site including the burning of solid wastes in trenches or on concrete pads, placing wastes into drums and burying them in trenches, and in more recent years, the pre-treating and discharging of liquid wastes into the county sewer system or into open pits and biolagoons. Table 1 provides a general summary of the waste disposal areas, estimated surface area, type of disposal, and some of the contaminants found.

TABLE 1

Disposal Area	Description	Disposed Wastes
Acid Pit Disposal Area Areas 1-5 and 12-22 ~120,000 sq.ft.	Open Pit/Trenches	acidic solutions, nitrated organic and other wastestreams
Disposal Area 6 ~9,000 sq.ft.	Trench/Landfill drummed wastes	hydrolyzed BZ wastes
Disposal Area 7/8 ~19,000 sq.ft.	Trench/Landfill drummed wastes	CS contaminated clothes and wastes, wastes from burning ditch
Disposal Area 9 ~13,000 sq.ft.	Trench/Landfill drummed wastes	hydrolyzed BZ wastes, CS wastes, cyanide wastes
Disposal Area 10/11 ~27,000 sq.ft.	Trench/Landfill drummed wastes	hydrolyzed BZ wastes, CS wastes, cyanide wastes
Disposal Area 23 ~40,000 sq.ft.	Tile drainfield biolagoon	BZ and CS liquid wastes

Table 2 summarizes by disposal area the main contaminants, the media in which the contaminant is found (soil, groundwater, etc.), and the maximum concentrations.

TABLE 2[1]

Disposal Area/ Contaminants	Soil (mg/kg)	Groundwater (mg/l)	Surface water (mg/l)
Acid Pits			
1,2 Dichloroethane	46.0	9.2	ND[2]
Trichloroethylene	9.8	9.2	ND
2,4,6 TNT	0.8	0.05	ND
Disposal Area 6			
Presently, the reported concentrations of contaminants in this area pose no public health concerns.			
Disposal Area 7/8			
t-1,2 Dichloroethylene	0.44	0.07	0.08
1,2 Dichloroethane	0.15	4.3	0.48
CS [3]	3100	ND	ND
Chromium	97 (57)[4]	0.06	trace

TABLE 2 (Cont.)

Disposal Area/ Contaminants	Soil (mg/kg)	Groundwater (mg/l)	Surface water (mg/l)
Disposal Area 9			
Trichloroethylene	3.2	0.57	0.30
1,2 Dichloroethane	1.8	0.98	0.48
RDX [5]	220	ND	ND
2,4,6 TNT	280	ND	ND
CS	370	ND	ND
Disposal Area 10/11			
Toluene	21,000	NA[6]	NA
1,2 Dichloroethane	0.032	0.15	0.40
RDX	290	0.013	0.01
Chromium	NA	0.54	trace
Disposal Area 23			
1,2 Dichloroethane	2.7	7.4	11
Benzylic acid [7]	9.0	470	NA

[1] Samples collected January through June 1986.
[2] ND - Not Detected
[3] CS - CS tear gas, (O-chlorobenzylidene malononitrile)
[4] (X)- background level
[5] RDX- explosive, hexahydro-1,3,5-trinitro-1,3,5-triazine
[6] NA - Not Analyzed
[7] Benzylic acid, a degradation product of BZ (3-Quinuclidinyl benzilate)

B. OFF-SITE CONTAMINATION

There were three off-site disposal areas identified: the Asheville Dye and Finishing Gravel Pits, the Tropigas Landfill, and the Walnut/Buckeye Cove Landfill. The Asheville Dye and Finishing Gravel Pits, Disposal Area 24, is located adjacent to the Chemtronics property. Soil samples indicate that toluene and trichloroethylene are the contaminants of interest. The typical soil concentrations of toluene and trichloroethylene in this disposal area, 0.005 mg/kg and 0.070 mg/kg, respectively, are lower than the concentrations found at the other on-site disposal areas. Metals, explosives, and priority pollutants were not indicated as soil contaminants in this area.

The RI reported that Tropigas Landfill and the Walnut/Buckeye Cove Landfill were sampled for CS and its degradation products only. These analytes were not detected in any of the samples. The rational for the limited sampling was the municipal landfills accepted industrial wastes from other area businesses, thus the wastes which could be traced solely to the Chemtronics site were CS and its degradation products. Samples split with EPA were analyzed for other contaminants, including VOC's. The results indicated there was no contamination by the analyte compounds.

Anecdotal information indicates there may be groundwater contamination in some off-site areas south of the site from sources other than Chemtronics.[4] This contamination may extend into the aquifers used for drinking water and should be investigated for its extent and composition.

DEMOGRAPHICS OF POPULATION NEAR SITE

The eastern property boundary is Bee Tree Creek and on the opposite side and parallel to the creek is the paved Bee Tree Road. There are several residences along both sides of this road and further north there are residences on either side of the creek. These homes are located several thousand feet away from the disposal areas. The area south of the site is an industrial area with several industries and approximately 1 mile south is Warren Wilson College. West of the site is the most densely populated and includes the Dillingham Circle subdivision. However, Dillingham Circle is separated from the site by the ridge extending south from Bartlett Mountain. North of the site is the Pisgah National Forest, which is densely wooded and sparsely populated.

There are residences within several hundred feet of the off-site disposal areas. The former Tropigas landfill has been proposed to be developed as a mobile home park.

EVALUATION

A. SITE CHARACTERIZATION

Chemtronics, on-site, has been well characterized through adequate sample quantities, sample point locations, and analyses from test pit excavations, soil borings, groundwater, surface water, drainage sediment, and monitoring wells. The hydrogeologic characteristics were investigated using techniques such as seismic refractory surveys, and vertical seismic profiling. Surface water and groundwater flow quantities were calculated using data from local rainfall records and stream gauges. A general hydrologic budget was then developed using these estimated flow quantities.

Samples were taken from 10 private wells in various areas around the site. Three of the wells were on Bee Tree Road and the others in Dillingham Circle subdivision. The analyses performed on the samples included CS, BZ, explosives, pH, and conductivity. This analytical protocol was approved by EPA for investigative purposes; however, to better determine potential health implications, a more complete regime is required. Analyses for trichloroethylene, 1,2-dichloroethane, and other volatile organic compounds which are the site related contaminants of concern should have been included in the analysis program. Chemtronics receives its drinking water and its process water from the city. There are no on-site groundwater wells currently providing water to the facility.

B. QUALITY ASSURANCE AND QUALITY CONTROL

The certificates of analyses portion of the RI were not included in the data package. A review of Appendix P, Sample Inventory, indicated some quality control samples were included in the analytical QA Program. The quantity of the duplicate and split samples were minimal, and there was indication of only one spike sample (for VOA). The EPA QC samples appear to have been submitted only twice during the investigation; once, at the beginning of sampling in January and, again, near the end of sampling in June. There was no data on the accuracy and precision of the duplicates or spike.

Some of the contaminant levels were reported as "less-than-values" that were greater than the National Primary Drinking Water Regulations MCL's (Maximum Contaminant Level)[5] and the Ambient Water Quality Criteria (AWQC)[6,7]. For example, some trichloroethylene and 1,2-dichloroethane concentrations in the groundwater samples from the disposal areas were reported as <0.01 mg/l and the MCL is 0.005 mg/l. By using inadequately low quantitation limits and/or indescript nomenclature (ND -for none detected), the concentrations of contaminants which exceed the MCL and/or the AWQC may be reported as a less than value (which itself exceeds the MCL) or as none detected. The lower quantitation limit should be at least the MCL value.

The Case Narrative, prepared by the contractor, was not included in the data package. Also, the Data Review Summary, prepared by EPA, was not included. Although there are data gaps in the RI, it is assumed the data has been reviewed by EPA and has met their acceptability criteria.

Conclusions contained in this Health Assessment are based on the information received in the data package. The accuracy of these conclusions is determined by the availability and reliability of the data.

C. ENVIRONMENTAL PATHWAYS

Soil, groundwater, surface water, sediments, and air were the media sampled during the (RI). Air was not considered a significant pathway because of the depths of disposal and the low mass of contaminants exposed to relatively high volume of air under open conditions. Air transported contaminated dusts is not considered a significant pathway because the RI indicated that surficial soils were contaminated in only one area at moderate concentrations and none of the disposal areas were barren. Disposal areas 6, 7/8, 9 and 10/11 had been reforested with pine trees. The acid pits areas were seeded with grass; however, there are some parts of the acid pits that are sparsely covered. This groundcover acts to keep erosion by rain and wind to a minimum.

Consumable plants and animals are not considered significant pathways because of the isolation of the site and restricted access. In addition, the contaminated areas afford only a limited habitat for consumable animals.

Identified environmental pathways consist of contaminated groundwater and contaminated soils and surface water. The Chemtronics site is divided into 2 watershed areas: the Front Valley, containing Disposal Areas 10/11 and 23, and Gregg Valley, containing Disposal Areas 6, 7/8, 9, and the acid pits. Monitoring wells were installed in each valley such that data could be collected concerning migration of contaminants from each disposal area as well as collective migration as contaminants moved downgradient from the separate watershed areas. The monitoring wells were installed in three zones: the shallow bedrock aquifer, (75-125 feet); the intermediate, (50-75 feet); and the surficial aquifer, (20-60 feet). It was demonstrated through low volume pump testing that the surficial and bedrock aquifers are hydraulically interconnected to varying degrees. Bedrock core samples were analyzed for fracture zones. These fracture zones were typically spaced 1-5 feet apart and generally located in the upper 20-25 feet of bedrock. There is potential for contaminant migration further into the bedrock, however, the degree of migration remains undetermined.

The possibility exists for contaminated groundwater to migrate into deeper aquifers and move off-site into drinking water wells. However, this environmental pathway appears unlikely for two reasons: separate recharge areas and contaminant attenuation. The probable recharge area for the residential wells across Bee Tree Creek is on the opposite side of the valley from the disposal areas. The residential wells on Dillingham Circle are separated from the disposal areas by a steep ridge that acts as a surface water divide and probable groundwater divide. Also, the majority of contaminants are expected to discharge into on-site surface drainage with only a very limited portion expected to migrate into deeper bedrock zones. Dilution and attenuation would be expected to reduce the concentrations of the contaminants to below detection limits before reaching any residential wells.

The private wells sampled ranged in depth from 100 to 270 feet, with 1 well extending to 600 feet. These wells are in different groundwater recharge areas than the recharge areas containing the disposal sites. The results indicated that for the analytes of concern tested for, none were detected.

Data from Disposal Areas 10/11 and 23, (in Front Valley) show that some groundwater and surface water contamination has occurred. The contaminants at levels of health concern include 1,2-dichloroethane, trichloroethylene, chromium, and trans-1,2-dichloroethylene. A degradation product of BZ, benzilic acid, is also present in high concentrations in the soil at Disposal Area 23 (9.6 mg/kg) and in groundwater wells at varying concentrations (1-470 mg/l). The migration of contaminants downgradient in Front Valley had not exceeded 800 feet. Monitoring wells located in Gregg Valley close to disposal areas 7/8, 9, and the acid pits (1-5, 12-22) show groundwater contamination at levels of health concern for 1,2 dichloroethane, trichloroethylene and chromium. The data indicates these pollutants are migrating generally to the southeast and have migrated less than 600 feet from the disposal areas. None of the analytes were detected in the monitoring wells located further downgradient.

No analytes of interest were detected in any of the surface water samples downstream from the acid pit disposal area. However, immediately downstream from Disposal Areas 7/8 and 9, the analytes 1,2-dichloroethane, trichloroethylene, and trans-1,2-dichloroethylene were found at levels of health concern. These analytes were not detected at any sampling points further downstream.

Disposal Area 9 was the only area at the Chemtronics site that exhibited high levels of surficial soil contamination. The analytes of highest concentration were CS and the explosives TNT and RDX.

D. HUMAN EXPOSURE PATHWAY

The population at risk to exposure of on-site contaminants consists of three major groups: 1. Remedial workers responsible for site cleanup, 2. Persons having direct access to the site such as employees of Chemtronics and, 3. Those individuals who trespass on Chemtronics property and may enter the disposal areas.

Soils

Direct contact and ingestion of contaminated surficial soil and inhalation of dusts around Disposal Area 9 are the most probable routes of human exposure. The contaminants of interest are CS and the explosives TNT and RDX. Although surficial soils are apparently contaminated in only one area, the subsurface soils from all areas are contaminated to varying degrees. The same exposure pathways exist for subsurface soils as for surficial soils if remediation activities involve excavation of contaminated areas.

Surface Water

On-site surface water immediately downstream from the disposal areas was found to contain several contaminants at levels exceeding the drinking water standards (MCL) and the Ambient Water Quality Criteria. Although these on-site streams are not used for recreational purposes, ingestion of and/or direct contact with surface water in these areas may lead to exposure.

Groundwater

It does not appear that off-site migration of contaminants has occurred through groundwater. However, the major site related contaminants of concern (VOC's) were not included in the testing regime performed on off-site private domestic wells.

Although on-site groundwater is not being used as a drinking water supply, human exposure could occur if future property owners installed a drinking water well. Fate and transport of groundwater contaminants cannot be adequately defined to predict when groundwater contaminant concentrations would fall below health concern levels.

Remediation Activities

Consideration of the remedial alternatives should include attention to potential exposures to the work crews. If a remedial action is chosen that involves the excavation of disposal areas and/or the buried drums, extreme care should be exercised. The condition and contents of the drums are unknown and their removal may result in exposure to contaminants through leaks or ruptures. Proper training in the use of personal protective equipment and worker safety in accordance with OSHA regulations[8] and the NIOSH guidelines is necessary.

PUBLIC HEALTH IMPLICATIONS

The wastes of primary concern are the VOC's: trichloroethylene and 1,2-dichloroethane. These contaminants are found in high concentrations in the subsurface soil and groundwater in virtually all disposal areas. The contaminants CS, BZ, and the explosives TNT and RDX were detected in varying concentrations in the disposal areas and require consideration, primarily during remediation activities. Although a high concentration of toluene (21,000 ppm) was detected in the soil at Disposal Area 10/11, it appears to be isolated and of little concern. In general, the subsurface soils and groundwater are of primary concern, while the surficial soils, with the exception of Disposal Area 9, indicate little or no contamination and therefore, are of minimal concern.

Workers involved in the remediation of the site are the major population at risk. Direct contact of site related contaminants is the major exposure pathway. Inhalation (and ingestion) of dusts entrained by winds, particulates and volatile contaminants are other potential routes of exposure. Ingestion of groundwater is not presently a public health concern because there are no drinking water wells on-site, the drinking water and process water is purchased from the city. However, groundwater would be of health concern if it were to be used for any purpose.

Adequate and appropriate use of personal protective equipment together with proper adherence to worker safety precautions (to include industrial hygiene monitoring for site related contaminants during remediation) will reduce the risk of exposure and possible adverse health effects in these workers.

Several contaminants detected on-site warrant health concern more for remedial workers than the general public. They are discussed below to insure workers are adequately advised on potential hazards.

BZ is an anticholinergic substance that has a pharmacological activity approximately 5 times that of atropine. The effective dose level (human) is approximately 5.0 ug/kg which may produce incapacitation, disorientation, and/or disruptive effects on attention span, comprehension, and memory. The duration of these effects may be as long as 96 hours. The ADI for chronic exposure is 0.5 ug/kg/day.[9] The results of the analyses for BZ and its degradation products were somewhat implicit as to whether the parent compound, BZ, was detected at any of the disposal areas. There were specific results for the degradation product benzilic acid. All of the wastes associated with BZ production were presumed to be decontaminated prior to disposal. While BZ contamination is not explicitly indicated as a problem, there is the potential of exposure to BZ from drums which were not decontaminated, if remedial actions involve excavation.

The chemical agent CS has been used extensively for riot control. This compound acts on sensory endings in the eyes and upper respiratory tract and is extremely irritating. Dermal contact and/or inhalation may cause lacrimation, conjunctivitis and pain in the eyes, irritation and runny nose and coughing, excessive salivation, and a burning sensation of the skin. These symptoms may persist as long as 30 minutes after exposure to the compound. The current OSHA and American Conference of Governmental Industrial Hygienists (ACGIH) ceiling value is 0.4 mg/m^3 and the Immediately Dangerous to Life or Health (IDLH) level of 2 mg/m^3. Remediation of some areas could expose workers to this contaminant at levels of health concern.

Dermal exposure to TNT or RDX may cause irritation of the eyes, nose and throat along with sneezing, coughing and sore throat. Ingestion of high levels can cause drowsiness, dyspnea, and methemoglobenia with cyanosis. Ingestion of 1-2 grams of crystalline TNT can be fatal.[10] The Acceptable Daily Intake (ADI) for RDX and TNT is 0.003 mg/kg/day and 0.004 mg/kg/day, respectively[11]. Given the characteristics of the site, it is not likely that contact with the reported concentrations in the soil and groundwater would lead to exposures that exceed these ADI's.

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On-site TCE groundwater concentrations greatly exceeded EPA lifetime Drinking Water Equivalent Level (DWEL). The EPA's lifetime health advisory value of 260 ppb considers the noncarcinogenic adverse health effects associated with TCE exposure. Acute toxicity effects could be realized from ingestion of groundwater contaminated at the maximum level found. In addition, TCE has been demonstrated to be carcinogenic in animals. However, there is insufficient data to indicate carcinogenic effects in humans. Using an EPA risk assessment model[12] based on a carcinogenic endpoint from TCE exposure, on-site groundwater concentrations exceeded the level associated with a 10^{-5} excess lifetime cancer risk. Using the reported maximum concentration (9.2 mg/l), the EPA carcinogenic potency factor and the assumptions below, the excess lifetime cancer risk is estimated to be greater than 1×10^{-3}. The risk assessment models for TCE assume that a 70 kg person would consume 2 liters of contaminated well water (of which there is 100 percent absorption in the gastrointestinal tract) per day for a 70-year lifetime exposure. Therefore, any exposures to on-site groundwater would warrant considerable health concerns.

Off-site migration of contaminants

Soil samples from the off-site disposal areas indicates there is no contamination present which is traceable to Chemtronics. Although TCE, as well as other VOC's, were not included in testing program for the 10 private residential wells off-site, the results for other site related contaminants were none detected. Groundwater and surface water samples from Chemtronics indicate there is no off-site migration by any of the contaminants.

Although it appears that off-site migration of contaminants has not occurred, VOC contamination of off-site area residential wells may be a significant exposure pathway for residents using well water for potable purposes and therefore, a potential public health threat.

CONCLUSIONS AND RECOMMENDATIONS

Contaminants specific to the Chemtronics site were not detected in the off-site disposal areas. Therefore, off-site disposal areas are not considered to present a potential for public exposure to Chemtronics-related contaminants.

The potential human health concern from exposure to on-site contaminants to area residents appears negligible at this time. It appears that off-site migration of contaminants has not occurred and the complex hydrogeology of the area indicates a low probability of VOC migration to residential wells. However, analytical procedures were inadequate to confirm or deny VOC contamination.

Anecdotal information indicated that sources other than Chemtronics may be generating VOC contamination of the drinking water aquifer. Therefore, VOC contamination of residential wells may be a potential public health concern, but not necessarily caused by the disposal actions of Chemtronics.

The site may pose a significant health threat to workers remediating the site if proper training in the use of personal protective equipment and measures to insure worker safety in accordance with OSHA regulations and the NIOSH guidelines are not adequately implemented.

Recommendations are as follows:

1. Sample area residential wells for VOC's as a precautionary measure, to ensure that the drinking water is not contaminated (by Chemtronics or any other source). As necessary, develop and implement long term groundwater monitoring programs for the site and area residential wells.

2. Implement remedial actions to eliminate the source of contamination.

3. Place institutional controls on the site to prohibit future installation of drinking water wells on-site, if groundwater contamination is not remediated.

PREPARERS OF REPORT

Max M. Howie, Jr.
Environmental Health Specialist
Health Sciences Branch

John Abraham, Ph.D., M.P.H.
Environmental Health Specialist
Health Sciences Branch

REFERENCES

1. Remedial Investigation, Chemtronics Site, Swannanoa, North Carolina, Medcalf and Eddy, April 1987.

2. Draft Feasibility Study, Chemtronics Site, Swannanoa, North Carolina, Sirrine Environmental Consultants, November 1987.

3. Memorandum and attachments, From: Public Health Advisor, ATSDR-EPA liaison, To: EPA, et al, Chemtronics CERCLA Site, July 1986.

4. Superfund Record of Communication, Personal communication between Jon Bornholm (EPA) and Max Howie (ATSDR), January 11, 1988.

5. EPA National Interim Primary Drinking Water Regulations, December 24, 1975.

6. EPA Ambient Water Quality Criteria for Chlorinated Ethanes, Office of Water Regulations and Standards, Criteria and Standards Division, Washington, DC, 1980.

7. EPA Ambient Water Quality Criteria for Trichloroethylene, Office of Water Regulations and Standards, Criteria and Standards Division, Washington, DC, 1980.

8. Title 29, Code of Federal Regulations, 1987 edition, Part 1910, General Industry Standards: Occupational Safety and Health Standards.

9. Possible Long-term Health Effects of Short-term Exposure to Chemical Agents, Vol. II, Committee on Toxicology, National Research Council, 1984.

10. Dreisbach, R.H., Robertson, W.O., Handbook of Poisoning, 12th edition, Appleton and Lange, 1987.

11. Etnier, E. Water Quality Criteria for Munition Compounds. Oak Ridge National Laboratory, Oak Ridge, Tennessee, 1986.

12. EPA Superfund Public Health Evaluation Manual, EPA/540/1-86/060, Office of Emerengcy and Remedial Response, Washington DC, 1986.

APPENDIX

Site Owner	Site Operator	Date	Site Use
Oerlikon Tool and Arms Corp. of America	Same	1952-'56	propellants, control devices, explosives
Oerlikon Tool and Arms Corp. of America	Same	1956-'59	Site not used
Oerlikon Tool and Arms Corp. of America	Amcel Propulsion, Inc.	1959	Site not used
Celanese Corporation of America	Amcel Propulsion, Inc.	1959-'62	explosives, flares, rocket motors, incapacitating agents
Celanese Corporation of America	Celanese Corp. of America	1962-'65	explosives, flares, rocket motors, incapacitating agents
Northrop Corporation	Northrop Carolina	1965-'71	manufacture chemicals, explosives, propulsion devices
Northrop Corporation	Airtronics, Inc. Chemtronics Div.	1971-'78	rocket motors, fuels, speciality chemicals, flame-retardant, fuel, speciality chemicals, pharmaceutical intermediates, high-temp. explosives
Chemtronics, Inc.	Chemtronics, Inc.	1978- to present	decontaminating kits, speciality chemicals, high-temp. explosives, pharmaceutical intermediates, synthetic musks, flame-retardant chemicals

United States Department of the Interior

TAKE PRIDE IN AMERICA

OFFICE OF ENVIRONMENTAL PROJECT REVIEW
RICHARD B. RUSSELL FEDERAL BUILDING, SUITE 1320
75 SPRING STREET, S.W.
ATLANTA, GEORGIA 30303

April 8, 1988

ERRB
RECEIVED
APR 13 1988
EPA – REGION IV
ATLANTA, GA.

ER-88/198

Jon Bornholm
Superfund Branch
Environmental Protection Agency, Region IV
345 Courtland Street
Atlanta, GA 30365

Dear Mr. Bornholm:

The Department of the Interior has reviewed the draft Record of Decision (ROD) for the Chemtronics Superfund Site in Swannanoa, N.C. as requested. We have the following comments to offer.

Water Resources

We have found that the document does not clearly state 1) whether or not the treated groundwater will be discharged to the streams at the site or to a treatment plant facility, 2) whether remediation is for the groundwater in the surficial aquifer, the bedrock aquifer, or both, and 3) which treatment processes are being proposed or considered for the ground water clean-up. Because of these uncertainties, how can a price for the clean-up be adequately determined?

In Section 3.6, the text reads that "analyses of ...sediment samples indicate contaminated baseflow." This is unclear. The sediment particles are not being transported from the groundwater body, but they may be transported by overland surface water runoff. Is there evidence that sediments may be picking up contamination from groundwater discharge?

It is not clear how sediment discharge in runoff is to be controlled during runoff events at site DA-23 during fixation and stabilization.

Fish and Wildlife Resources

The recommended alternative (Page 64, Section 6.0) for the site is not identified by the description codes provided in Table 22. However, it appears that alternative 4B will be selected for the soil remediation and alternative GWE-2 will be selected for the groundwater remediation. Fish and Wildlife Service would concur with the selection of these two alternatives.

The Service would like to request additional information regarding the surface water bioassays: 1) type of bioassays (e.g., chronic, acute, organisms), frequency of the bioassays (e.g., quarterly, annually) and the length of time for which bioassays will be used as a monitoring tool (e.g., 5 years, 10 years, 30 years). In addition, the Raleigh Office of the Fish and Wildlife Service would also like to request copies of all bioassay results as they are completed.

Under the proposed alternative for groundwater remediation, the point of discharge for the treated groundwater will not be determined until the Remedial Design stage. In the event that the treated groundwater is discharged into a stream instead of a wastewater treatment plant, the Fish and Wildlife Service requests that bioassays on the treated effluent also be conducted to ensure the absence of toxicity.

Thank you for the opportunity to review this document. If you have question, please give me a call at 331-4524.

Sincerely,

James H. Lee

James H. Lee

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

ERRB
RECEIVED
APR 11 1988
EPA – REGION IV
ATLANTA, GA.

Date: APR 11 1988

Subject: Record of Decision (ROD) for the Chemtronics Site, Swannanoa, North Carolina

From: James S. Kutzman, Chief
Ground-Water Protection Branch

James S. Kutzman

To: Patrick M. Tobin, Director
Waste Management Division

The ROD for the Chemtronics Site has been reviewed by my staff. We have participated in the review and evaluation of the Remedial Investigation and Feasibility Study reports for this site and also attended the Public Hearing in Swannanoa on February 23, 1988. Excavation and incineration of all drums and contaminated soils from all of the disposal areas coupled with extraction and treatment of the contaminated ground water in both the Front Valley and Gregg Valley is a permanent remedy for the site and the best alternative for long-term protection of human health and the environment. We acknowledge that significant public opposition to the proposed excavation and onsite incineration of drums and contaminated soils was expressed at the Public Hearing. We also regard the possible presence of ordnance in DA-6, DA-7/8, DA-9, and DA-10/11 as a potential risk to the health of workers who would be exposed during excavation of the drums and contaminated soils from these areas. Therefore, we concur with the ROD that if the PRPs document significant quantities of explosives or explosive devices present in these disposal areas, the recommended remedial alternative specified in the ROD is appropriate, including: (1) capping DA-6, DA-7/8, DA-9, DA-10/11, and the Acid Pits with a multi-layer cap which includes a synthetic liner, (2) HWT fixation of contaminated soils in DA-23 followed by capping with a vegetative cover, (3) extraction and treatment of contaminated ground water in both the Front Valley and Gregg Valley, and (4) long-term ground-water and surface-water monitoring downgradient of all disposal areas. While this alternative is not a permanent remedy, the presence of wastes above the water table in all disposal areas should assure that the selected remedies are protective of future ground-water contamination. Ground-water withdrawal and treatment will remedy the existing contamination in the ground water and protect downgradient surface waters from future impact. Long-term ground-water and surface-water monitoring downgradient of all disposal areas will provide assurances that the remedial alternatives are effective. As a result, human health and the environment will be protected by this alternative remedy.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

RECEIVED
ATLANTA, GA.

MEMORANDUM

DATE: APR 1988

SUBJECT: Draft Record of Decision for the Chemtronics Superfund Site
Swannanoa, North Carolina

FROM: Winston A. Smith, Director
Air, Pesticides and Toxics Management Division

TO: Patrick M. Tobin, Director
Waste Management Division

We have reviewed the Draft Record of Decision for the Chemtronics Superfund Site, Swannanoa, North Carolina. We concur with the selected remediation techniques for the contaminated soils, surface water and groundwater. It appears that the level and degree of treatment of the extracted water will be determined during the remedial design stage. To further reduce the possibility of hazardous air emissions and to eliminate cross-media transfer of pollutants during the remedial processes, we offer the following comments and recommendations:

- To ensure that cross-media pollutant transfer does not occur during the groundwater and surface water extraction processes, it is necessary to apply alternative GWT-4, which is described as air stripping followed by adsorption with Granulated Activated Carbon (GAC). This alternative is recommended for all water treatment processes. Low levels of contaminants in water can produce a hazard when transferred to the air, and it is suggested that all precautions should be taken when the extraction involves hazardous organic pollutants such as trichloroethylene and 1, 2-dichloroethane.

- To ensure continuous efficiency of the carbon adsorption system during air stripping, monitoring of the outlet air should be performed to determine if breakthrough of the carbon beds has occurred. Carbon should be replaced as needed.

- Upon disturbance of soils and sediment during the treatment process, air contamination can occur through the volatilization of organic chemicals and through the spread of fugitive dust and airborne particulates. Therefore, continuous monitoring of the air should be considered to ensure worker safety during the process.

Thank you for the opportunity to comment on this Draft ROD. If we can be of any further assistance, please contact Diane T. Altsman of my staff at extension 2864.

Attachment

Comments to Draft ROD for Chemtronics Superfund Site.

PCBs (polychlorinated biphenyls) have been identified in disposal areas 9-4 and 7/8 at 5 ppm and 0.1 ppm respectively. These levels are below the cleanup standards which would be applied for the remediation of a PCB spill or historic PCB discharge site.

Unless PCB items (capacitors, transformers, etc) are found during the excavation of the land fill areas, no PCB disposal regulations would be applied to the site.

Bob Stryker
Toxics Section Chief

North Carolina Department of Human Resources
Division of Health Services
P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor
David T. Flaherty, Secretary

Ronald H. Levine, M.D., M.P.H.
State Health Director

March 31, 1988

ERRD
RECEIVED
MAR 31 1988
EPA – REGION IV
ATLANTA, GA.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Jon K. Bornholm
Superfund Project Manager
US EPA, Region IV
345 Courtland Street
Atlanta, Georgia 30365

Re: Comments on Draft Record of Decision for the Chemtronics Superfund Site by the State of North Carolina

Dear Mr. Bornholm:

I have been placed in an awkward position by your request to respond to the draft Record of Decision for the Chemtronics' site. The draft was submitted for review on the afternoon of March 25, 1988, with a requirement for written response by April 1, 1988. This is an extremely short response time to evaluate the draft Record of Decision. You further stated that if your agency does not receive any written comments, the agency will assume that "the State of North Carolina concurs completely with the remedial alternative selected by the agency."

The State concurs that there may be significate amounts of ordnance in DA-6, DA-7/8, DA-9, and /DA-10/11. This is based on an inspection I performed in March of 1980 that resulted in identifying buried drums and highly reactive white crystalline solids in the approximate area of DA-7/8. I assume that the other areas mentioned above may contain the same or similar materials. If at all possible the State concurs that drums and contaminated soils from these areas should be considered for incineration, whether on-site or off-site, as a permanent solution for source removal. The State further concurs that personnel safety and integrity of the incinerator should be balanced when considering incineration, with temporarily capping, monitoring, and remediation of ground water. Since the Declaration for the Record of Decision states that if ground water contaminate levels immediately downgradient from DA-6, DA-7/8, DA-9, and DA-10/11 reaches action levels then "a remedial action to permanently eliminate the source will be initiated immediately," it is suggested that an on-site or off-site contingency plan for implementation be submitted as part of the remedial design/treatability study.

Based on the data presented and personal knowledge of the area identified as the acid pit area, the proposed capping, monitoring, and extraction/treatment of ground water will probably be as close to a permanent solution for that area as is practical. It is our belief that more monitoring wells to define the plume and to aid in placement of extraction wells will be required.

As you are aware the area designated as DA-23 is considered to be a joint RCRA and CERCLA concern. The State offers the following comments on this area:

A) Expand the soil hazardous constituent analysis using APPENDIX IX to fully assess the disposed materials in both the biolagoon and the tile drain field; method:

   1) Background borings immediately above both units (one reference for each, undisturbed),

   2) Borings throughout the tile drain field upstream from the biolagoon.

   Borings through the biolagoon liner, (to be sealed afterwards, preventing further surface water intrusion) on a grid system from the 1979 liner breach point down stream.

NOTE: Compare background and unit boring results for the tile field and the biolagoon individually, then collate constituent results against each other to establish point of emanation between the units (responsibility).

B) Establish individual background wells (RCRA standards) for the biolagoon and tile field taking into account to avoid cross interference between the units.

C) Establish individual monitoring well nests for the two units (50 ft. downgradient).

NOTE: Compare units individually (background/monitoring wells) then reference results against each other.

D) Compare soil boring results to ground water in order to establish mobility criteria of the constituents.

E) Cap (also HWT,if required), if necessary, both units so a technically reflective period can be allowed where more efficient/cost effective leading edge ideas can be studied and reasonably proven based on data obtained above.

F) Remedial ground water programs should be started as soon as the plumes can be further defined to stem the further migration of hazardous constituents and magnification of future corrective ground water action.

G) Explore the natural bioattenuation process existing in the surrounding soils given the hazardous constituents which may be discovered by the methods described above.

NOTE: The State shall be included in all decisions as they apply to analytical test methods/results and corrective action system prior to draft submittal leading to future inception.

I have included additional comments from the N.C. Department of Human Resources' Environmental Epidemiology Branch and Division of Environmental Management, Groundwater Section. These comments are to be included in the administrative record for the Record of Decision on Chemtronics as part of the State comments.

It is apparent to me that the N.C. Groundwater Classification Standards were either not considered or considered and rejected. I would appreciate a response from EPA on this issue. It is a major concern since it will have an impact on level of cleanup, length of time required for remedial action, and cost of remedial action.

Our staff has reviewed a publication titled Advanced Chemical Fixation of Organic and Inorganic Content Waste by Jeffrey P. Newton of International Waste Technologies. We assume that his technology is the proposed method for soil fixation on the Chemtronics' site. We are particularly interested in organophilic properties in this matrix. We would appreciate any scientific data for fixation of organics by this matrix to include types of organics, concentrations of organics, and methods of chemical and physical fixation.

Of major concern to the State is the perception that the citizens in the community around Chemtronics appear to be totally frustrated by the Government's effort to afford adequate technical assistance and explanation as to almost all issues associated with activities to manage the Chemtronics' site. If the Record of Decision cannot be modified, as it now is drafted, with further public comment, then the State strongly suggest delaying a final decision on the Reocrd of Decision until the community can obtain a technical assistance grant and can offer comments based on good technical merit.

If you have any questions or need any assistance, please contact me at (919) 733-2178.

Respectfully,

William L Meyer

William L. Meyer, Chief
Solid Waste Management Section

WLM/ppb6414A(89-91)

Attachments I and II

ATTACHMENT 1

RECEIVED
MAR 30 1988
SOLID & HAZARDOUS WASTE MANAGEMENT BRANCH

North Carolina Department of Human Resources
Division of Health Services
P.O. Box 2091 • Raleigh, North Carolina 27602-2091

James G. Martin, Governor
David T. Flaherty, Secretary

Ronald H. Levine, M.D., M.P.H.
State Health Director

March 30, 1988

MEMORANDUM

TO: William L. Meyer, Chief
Solid Waste Management Section

THROUGH: John I. Freeman, D.V.M., M.P.H., Head
Environmental Epidemiology Branch

FROM: Jenifer S. Heath, Ph.D., Toxicologist
Environmental Epidemiology Branch

SUBJECT: Chemtronics Superfund Site Record of Decision

We have reviewed the draft Record of Decision for the Chemtronics site and have several concerns which fall into four categories: 1) apparent gaps in groundwater monitoring analyses, 2) use of the PPLV as a remediation level for CS, 3) absence of North Carolina's groundwater standards in the list of relevant laws, and 4) public perceptions of the risk management process.

1) It is not clear whether samples from the potential off-site waste areas (Tropigas and Walnut/Buckeye Cove Landfills) were analyzed for volatile organic chemicals (VOCs). While it is true that VOCs present in these areas could have been contributed by other landfill users, it is also true that Chemtronics could be responsible.

   Along these lines, it seems unfortunate that samples from the private wells in the area were not analyzed for VOCs. This might have confirmed the conclusion that no VOCs have migrated off-site from the identified disposal areas and the implied conclusion that there are no unidentified disposal areas from which VOCs may have migrated.

   Finally, it is not clear that the chemical agents CS and BZ (or its breakdown products) were consistently included in groundwater analyses.

2) The logic behind use of the Preliminary Pollutant Limit Value (PPLV) for CS is unclear. The publicly-available literature suggests that CS may cause dermal sensitization. It is possible that the PPLV is not protective against dermal sensitization, yet this health concern is not addressed.

3) Section 6.6 lists a number of state and federal regulations which may apply to the Chemtronics site. This list fails to include the state's groundwater quality standards. This is a significant oversite and could result in remedial levels which would be inconsistent with North Carolina's commitment to maintaining the quality of our groundwater resources. I believe that this concern will be addressed more fully by a representative of the Groundwater Section of the Division of Environmental Management.

4) Finally, we are concerned about the credible perception held by some members of the public in Swannanoa that a lack of time and resources has prevented them from participating meaningfully in this decision-making process which will so intimately affect their feelings about their homes and their community (not to mention their future attitude toward environmental regulators).

Please feel free to call me at (919) 733-3410 if you wish to discuss these concerns.

JSH:km

c: Ted Taylor, Ph.D.

ATTACHMENT 2

SOLID & HAZARDOUS WASTE MANAGEMENT BRANCH
MAR 30 1988

DIVISION OF ENVIRONMENTAL MANAGEMENT

GROUNDWATER SECTION

March 30, 1988

MEMORANDUM

TO: William L. Meyer, Chief
Solid Waste Management Section

FROM: Perry F. Nelson Perry

SUBJECT: Draft ROD, Chemtronics Superfund Site

This morning I received a copy of EPA's Record of Decision for the Chemtronics site, covered by a letter to you advising that, should EPA not receive any written comments by April 1, they would assume that North Carolina concurs with the remedial alternative selected by the Agency.

It is not feasible for my staff to review and comment on this document by Wednesday, in time for a response to reach Atlanta by April 1. I am amazed that no more time for review was provided.

A cursory examination of our Chemtronics file revealed that at least three letters had been sent to Mr. Bornholm since October, 1987, regarding EPA remediation plans. Two of the letters called his attention to North Carolina's groundwater quality standards (15 NCAC 2L), and their applicability to the Chemtronics site. The ROD, however, ignores these standards, failing to even acknowledge their existence in Section 6.6 of the report (Consistency with Other Environmental Laws).

In view of the limited time provided for review, I can do no more than remind EPA again of the "Classifications and Water Quality Standards Applicable to the Groundwater of North Carolina" (15 NCAC 2L). These rules address the issue of restoration of groundwater to substandard levels of quality.

Attachments

cc: R. Paul Wilms

tej

State of North Carolina
Department of Natural Resources and Community Development
Asheville Regional Office

James G. Martin, Governor
S. Thomas Rhodes, Secretary

David R. Spain
Regional Manager

DIVISION OF ENVIRONMENTAL MANAGEMENT
GROUNDWATER SECTION

February 4, 1988

RECEIVED
FEB 8 1988
GROUNDWATER SECTION
RALEIGH, NC

Mr. Jon K. Bornholm
U. S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, Georgia 30365

Subject: Buried Drum Removal
Burial Sites 6, 7, 8, 9, 10, and 11
Chemtronics, Inc.
Groundwater Incident No. 381
Buncombe County, North Carolina

Dear Mr. Bornholm:

In our telephone conversation of February 2, 1988, we discussed the possibility of leaving approximately 2200 barrels of contaminated clothing and possibly other types of waste in place on burial sites 6, 7, 8, 9, 10, and 11 and capping the sites. After discussion of this matter with Lee Laymon, Assistant Chief of the Groundwater Section, it is our recommendation that the drums should be removed from the site since leakage will ultimately occur and could be expected to further contaminate groundwaters on site.

If you have any further questions, please do not hesitate to contact me at 704-251-6208.

Sincerely,

Donald R. Link

Donald R. Link, P. G.
Hydrogeological Regional Supervisor

DRL:ar

cc: ✓Lee Laymon

State of North Carolina
Department of Natural Resources and Community Development
Division of Environmental Management
512 North Salisbury Street • Raleigh, North Carolina 27611

James G. Martin, Governor
S. Thomas Rhodes, Secretary

R. Paul Wilms
Director

October 8, 1987

Mr. Jon K. Bornholm
Superfund Branch
U.S. Environmental Protection Agency
345 Courtland Street
Atlanta, GA 30365

Dear Mr. Bornholm:

As per our telephone conversation, please find attached a copy of 15 NCAC 2L, "Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina." These standards are applicable to all underground waters, as defined at 15 NCAC 2L.0102 (20). The standards, both numerical and narrative, are found at 15 NCAC 2L.0202.

Should you have any questions concerning the relationship between the standards and remedial actions, you may wish to refer to 15 NCAC 2C.0101 (d) or to contact me or Douglass Dixon at the address given on the stationary or telephone (919) 733-3221.

If you should require any additional information or have any questions concerning the standards, groundwater classifications or requirements for remedial actions to restore groundwater quality, please contact us at your earliest convenience.

Sincerely,

William Jeter

William C. Jeter
Supervisor, Incident
Management and Technical
Services Unit

Attachments
cc: Perry Nelson
William Meyer
Incident Management Files

tej

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

SEP 2 3 1987

4WD-SFB

Mr. William L. Meyer, Head
Solid & Hazardous Waste Management Branch
North Carolina Department of Human Resources
P.O. Box 2091
Raleigh, NC 27602-2091

Re: ARARs for the Chemtronics NPL Site
Swannanoa, North Carolina

Dear Mr. Meyer:

This correspondence is a follow up to a letter I sent you dated March 17, 1987. In this referenced letter, I requested the State of North Carolina to identify to EPA the State's applicable or relevant and appropriate requirements (ARARs) as they pertain to the Chemtronics NPL site located in Swannonoa. I have had some telephone conversations with Dr. Ted Taylor of your staff with regards to this topic. During our conversations, he expressed his feelings as to where he thought the State was headed with clean up levels/criteria for contaminants in the groundwater but unfortunately he did not have anything in writing to send on to me.

The potentially responsible parties (PRPs) are now in the process of screening remedial alternatives and identifying and developing clean up goals for the contaminants on site. Since the Agency has not received a response from your office on what specific ARARs the State has that would apply to this site, it is the Agency's assumption that the State of North Carolina has no ARARs that apply to the Chemtronics site and/or the contaminants found on site. Therefore, the clean up levels/criteria being used were obtained from existing Federal laws and regulations. If this is an erroneous assumption, then you need to identify, in writing, the specific State ARARs that pertain to this site by October 9, 1987. If I do not receive a list of specific ARARs from the State by this date then it is clear that the State does not have any ARARs that pertain to the Chemtronics site and I will inform the PRPs that the clean up levels/criteria they are presently considering are the ones the Agency will enforce.

If you have any questions, I can be contacted at (404)347-3402.

Sincerely yours,

Jon K. Bornholm

Jon K. Bornholm
Regional Project Manager
Superfund Branch

Buncombe

State of North Carolina
Department of Natural Resources and Community Development
Asheville Regional Office
James G. Martin, Governor
DIVISION OF ENVIRONMENTAL MANAGEMENT
GROUNDWATER SECTION
S. Thomas Rhodes, Secretary

December 22, 1987

Mr. Jon K. Bornholm
U. S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, Georgia 30365

Subject: Feasibility Study for Chemtronics Site
Groundwater Incident No. 381
Buncombe County, North Carolina

Dear Mr. Bornholm:

In view of the complexity of the Feasibility Study for the Chemtronics Site and the limited time available for the review, I have generalized my comments as follows:

I. Contaminated materials, including soils with contaminant concentrations high enough to affect groundwaters, should be removed from the site or treated to an acceptable level on site. If this proves impractical, the contaminated material should be protected so it does not continue to contribute to groundwater contamination on site.

II. NCAC Title 15 Subchapter 2L, "Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina" require that contaminated groundwaters be remediated to the standards set forth in the classifications. If this level is not obtainable due to economic or available technology, a variance to these standards may be granted by the Director.

~~Written~~ by Ward

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV
345 COURTLAND STREET
ATLANTA, GEORGIA 30365

MAR 2 1988

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RECEIVED
MAR 25 1988
HAZARDOUS WASTE MANAGEMENT

Mr. William L. Meyers, Chief
Solid Waste Management Section
Division of Health Services
North Carolina Department of Human Resources
P.O. Box 2091
Raleigh, NC 27602-2091

Re: Comments on Draft Record of Decision for the Chemtronics Superfund Site

Dear Mr. Meyers:

Enclosed for your review and comment is a copy of the draft Record of Decision (ROD) for the Chemtronics site. Briefly, the remedial alternative the Agency is proposing for this Site includes capping, soil/fixation, extracting and treating groundwater, and monitoring groundwater quality.

The Agency has elected to pursue capping of the disposal areas containing drums, Disposal Areas: DA-6, DA-7/8, DA-9, and DA-10/11, for two reasons. First, there is a genuine threat posed by the presence of small explosives or explosive devices in a couple of these disposal areas. It is difficult, at this time, to estimate the danger these explosives would present to the workers during excavation or to the integrity of the incinerator. Secondly, the public has expressed a strong dissatisfaction with the incineration alternative. This opposition was voiced both in the public meeting the Agency conducted on February 23, 1988 on the draft Feasibility Study and in over 80% of the comments the Agency has received since the public meeting. The main environmental factor that numerous letters have alluded to is the frequent atmospheric inversions that occur in the Asheville area. There also is a great mistrust/misunderstanding/misconception of what incineration actually accomplishes. The majority of the authors of the letters sent to the Agency do not realize or understand that the components of the gaseous emissions from the incinerator would be water and carbon dioxide, with the other components being removed by the scrubbers.

Since capping is not considered a permanent remedy, the Agency is required by SARA to review the contaminants and contaminated environmental media every five years in light of newly developed technologies. In the event that a new, permanent technology is developed that can be used at the Site, the Agency may require the PRPs to implement this new technology.

Please review the ROD and submit your comments to the Agency by April 1, 1988. The ROD briefing for the Regional Administrator is scheduled for March 29, 1988. I plan to call you on March 28 so that I can pass any concerns you voice on to him. If the Agency does not receive any written comments by April 1 then, it is the Agency's assumption the State of North Carolina concurs completely with the remedial alternative selected by the Agency.

If you have any questions, I can be reached at (404)347-7791. Please note that this is a new number.

Sincerely yours,

Jon K. Bornholm
Superfund Project Manager

Enclosure

REGION IV

PEER REVIEW CLEARANCE FORM

.WES

Route To: James H. Scarbrough, Chief, RCRA Branch **Date Transmitted:** 3/23/88

Return To: Jon Bornholm, Superfund Branch **Date Returned:**

Peer Review Originator (Panel Member): Jon Bornholm

Project Title: Draft Record of Decision (ROD) for the Chemtronics Superfund Site in Swannanoa, NC.

Project Manager: Jon Bornholm (x-7791)

Originator's Instructions: Please review and comment on the attached document and the Agency's proposed remedial alternative for this Site.

Information Copies Sent To: Bruce Barrett, James Finger, James Sargent, James Scarbrough, and Winston Smith

Signature (Panel Member)	Date Received	Date Cleared	Concur	Non-concur
James H Scarbrough	3/29/88	3/31/88	✓ WITH COMMENT	

Reviewing Officials	Date Received	Date Review Completed	Reviewer's Signature
1.			
2.			
3.			
4.			
5.			

Reviewing Panel Member's Comments: Per the March 31, 1988 conservation of Jon Bornholm and Nancy Bethune, revision will be made to the text of the Declaration. The new text replacing the first paragraph, third page, should convey the following information: After remediation levels for groundwater have been verified through monitoring, new action levels for the contaminants may be set. If this level is reached in any subsequent monitoring, remedial action will be intitiated immediately to permanently eliminate the source of contamination.

ENFORCEMENT
RECORD OF DECISION
REMEDIAL ALTERNATIVE SELECTION

DRAFT

DRAFT

CHEMTRONICS SITE
SWANNANOA, BUNCOMBE COUNTY
NORTH CAROLINA

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV
ATLANTA, GEORGIA

DECLARATION FOR THE RECORD OF DECISION

SITE NAME and LOCATION

Chemtronics
Swannanoa, Buncombe County, North Carolina

STATEMENT OF PURPOSE

This document represents the selected remedial action for this Site developed in accordance with CERCLA as amended by SARA, and to the extent practicable, the National Contingency Plan.

The State of North Carolina has concurred on the selected remedy.

STATEMENT OF BASIS

The decision is based upon the administrative record for the Chemtronics Site. The attached index identifies the items which comprise the administrative record upon which the selection of a remedial action is based.

DESCRIPTION OF THE SELECTED REMEDY

GROUNDWATER

In both the Front Valley and Gregg Valley, a groundwater extraction system will be installed to intercept and extract contaminated groundwater migrating through the ground. The level and degree of treatment of the extracted water will be determined by 1) the level of contaminants in the extracted groundwater and 2) the ultimate discharge point of the treated water. These facts will be determined in the Remedial Design stage.

SOIL

Based on the results of the RI/FS process, EPA's proposed alternative for addressing soil contamination, and thereby containing the source of contamination, is to cover the following disposal areas with a multi-layer cap, which will include a synthetic liner: DA-6, DA-7/8, DA-9, DA-10/11, and the acid pit area. Security fencing, vegetative covers and, where necessary, a gas collection/ventilation system will be installed. Soil fixation/stabilization via HWT fixation process for the contaminated soils associated with DA-23. DA-23 will also be capped and provided a vegetated cover and enclosed within a security fence. Groundwater monitoring immediately downgradient of each disposal area will be required. This may result in the installation of additional monitor wells.

In addition to the monitoring of the groundwater downgradient of each disposal area identified above, action levels for the contaminants present in the disposal areas will be set so that if this limit is reached during any sampling episode during monitoring of the groundwater, a remedial action to permanently eliminate that source will be initiated, immediately.

On-site incineration of the drums and contaminated soils from DA-6, DA-7/8, DA-9, and DA-10/11 remains a viable alternative. The elimination of this source control remedial alternative is dependent on acceptable documentation of the presence of ordnance in these disposal areas. If it can be documented to EPA's satisfaction by the PRPs that significant quantities of explosives or explosive devices were also disposed of in these disposal area, then due to the health risk to which the workers would be exposed during excavation of the drums and contaminated soils, this alternative would be eliminated.

DECLARATION

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate, and is cost-effective. This remedy satisfies the preference for treatment that reduces toxicity, mobility, or volume as a principal element. Finally, it is determined that this remedy utilizes permanent solution and alternative treatment technologies to the maximum extent practicable.

Only If Fund Lead

[I have also determined that the action being taken is appropriate when balanced against the availability of trust fund monies for use at other sites.

Date

Lee A. DeHihns III
Acting Regional Administrator

APPENDIX E

ADMINISTRATIVE RECORD Index*

*Note- Administrative Record Index is not included.